"SEA, LAND and AIR"

THE AUSTRALIAN NATIONAL MONTHLY

— OF —

TOPICAL INTEREST

Edited by M. DIXON.

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THE EDITOR, *Sea, Land and Air*, 97 CLARENCE STREET, SYDNEY.
All business communications to: THE MANAGER.

Sole European Agents: THE WIRELESS PRESS, LTD., 12 AND 13 HENRIETTA STREET, LONDON, W.C. 2.

Sole Agents for United States of America: WIRELESS PRESS INC., 233 BROADWAY, NEW YORK.
Singapore: KELLY & WALSH.

SEA LAND AND AIR
AUSTRALIA'S NATIONAL MONTHLY

VOL. V. SEPTEMBER 1, 1922. No. 54.

Month by Month

HEALTH WEEK.

HEALTH WEEK, which has now become an annual institution in Australia, teaches many lessons we would all do well to remember. There is no better way of impressing people with the knowledge that good health is a matter of national as well as individual concern than by driving it home at every available opportunity, with the full weight of medical authority behind it. It is a regrettable fact that many people who are wont to cry out about the laxity of the health authorities, if the slightest opportunity offers, are often criminally negligent themselves. This proves beyond all doubt that the lesson which still requires to be learned is that while the Government makes regulations, the duty of carrying them out, not under threat of drastic penalties but for the sake of the good they will accomplish, is a matter for individual action, and should be undertaken, not grumblingly, but whole-heartedly.

Medical research has advanced far in recent years in its campaign against the few remaining dread diseases which still claim a heavy toll of human life each year, and one need not be unduly optimistic to feel that the time is not far distant when the germs of cancer, consumption and leprosy will succumb to the march of medical science. It is of little use, however, proclaiming our gratitude for such discoveries if individually we are so careless and negligent as to encourage the spread of disease by disregarding the elementary laws of health, which are, in the final analysis the only foundation upon which national good health can be built.

If every man, woman and child in the community took to heart the lessons of Health Week, and practised them diligently, the result would become strikingly evident in a very few years. Furthermore, it would immeasurably strengthen the hands of the authorities, who are continually waging a war against those enemies of good health, food adulterators. What we must aim at then is to endeavour to make the lessons of health week as much a part of our daily lives as is eating and drinking.

A BIG MAN PASSES.

The death of Lord Northcliffe, following close upon his world tour, removed from the domain of world affairs a strong and remarkable man. It may be, as is asserted in some quarters, that he derived most of his strength and power from the chain of newspapers which were ever at his beck and call, but, even allowing that this is partly true, it does not altogether explain his remarkable rise to a position of prominence in world affairs. Countless individuals have stepped off the threshold of life far better equipped so far as finance and opportunity are concerned than did Alfred Harmsworth, but few have attained a greater measure of success.

As an exponent of the possibilities and value of individual effort, Lord Northcliffe provided a striking object lesson for those

who are ever on the lookout for others to make opportunities for them, simply because they lack the courage and resource to initiate them themselves. The man who possesses a grudge against life simply because his path is not the bed of roses he would like it to be seldom accomplishes anything beyond shedding a blight on the lives of others who fall under his pessimistic influence.

Lord Northcliffe had no time for the man who was not prepared to utilize to the utmost the gift of intelligence, great or small, with which his Creator endowed him in an endeavour to win his way in the world. It is a sound principle to follow, and its general adoption would result in a more progressive and self-reliant race of people than we have to-day. It is only when man's faculties are developed to the highest pitch that he is able to achieve and appreciate that measure of success in worldly affairs, which, so far from prejudicing his chance of attaining a high standard of moral character is to a very great extent interwoven with that praiseworthy ideal.

THE SOLAR ECLIPSE.

On the twenty-first of this month certain favoured parts of Australia will be the assembling grounds for those who, in addition to the ordinary residents, have the means and leisure to journey thither to observe the great solar eclipse. Scientists tell us that this will be the greatest natural phenomenon ever witnessed in Australia, and it is not to be wondered at that it is exciting the keenest possible interest amongst both laymen and scientists. The astronomers from overseas have expressed their warmest appreciation of the manner in which the Federal Government has assisted them in perfecting their arrangements to view the eclipse, and this note of appreciation, coming from men who have travelled so much, is one upon which we have every reason to feel pleased. At ordinary times most people find it difficult to enthuse over the work of scientists, not that they doubt its practical value, but simply because astronomy and kindred subjects seem so far removed from matters of everyday life that the ordinary mortal is unable to understand or appreciate their full significance. It is, however, becoming increasingly apparent that the scientist is the man who, practically speaking, holds the future progress of the world in the hollow of his hand. Science has solved so many difficult problems in recent years that without its aid the future would be barren of progress, but happily there is every evidence that the limit of practical usefulness in the application of scientific discoveries to everyday affairs is still a long way off. The wealth of accurate detail which has already been supplied in connection with the forthcoming eclipse is but one instance of how thoroughly the students of astronomy have mastered their task.

SCHOOLS OF THOUGHT.

The question of what it is that impels the normal human being to do that which he is expressly asked not to do has been exercising the mind of psycho-analysts of late. A survey of their observations discloses that there are at least three clearly defined schools of thought on the subject. The most important group, known as the psycho-adventurers, hold the opinion that the same spirit which moves some men to shoot Niagara Falls in a barrel or leap from a flying aeroplane impels others to touch wet paint. The latter are the adventurers of the earth, and in touching wet paint they merely satisfy a desire that might otherwise be expressed in some more daring form.

The second school of thought—the psycho-rebellious group—believes that men are actuated primarily by a desire to do the forbidden. The sign "Don't touch" irresistibly drives them to do a thing, much as children are impelled by some inward prompting to defy their parents' cautions.

The third group comprises the psycho-truthful. Then contend that men, forever oppressed in their search for truth, are filled with a desire to demonstrate that those who warn them of the folly or danger of doing a certain thing are telling untruths. If their own investigations prove the warning to have been correct the consequences they suffer are overshadowed by a feeling of satisfaction at having proved a doubtful point.

"IS MANAGEMENT A SCIENCE?"

WHY INDUSTRY DEMANDS EFFICIENT MANAGEMENT

By JAMES WATSON, L.I.C.A., F.A.I.S., etc.,

(Managing Director, La Salle Extension Institute, Ltd.)

The writer of this article, Mr. James Watson, was born in Cooktown, North Queensland, in 1890, and early gravitated to Victoria, where most of his intensive business training was received. Almost nine years ago the offer of a good position lured Mr. Watson to N.S.W., of which he has been a resident ever since, engaging in various business activitics. Mr. Watson is a keen student of all business problems, and probably holds more secretarial, accountancy and business diplomas by examination than most men.—Ed.

A BOY had a dog which was quite smart, and the boy had taught the dog a number of tricks. He could play "dead," walk on his hind legs, bark answers to different questions, and do little things of this kind. One day a man who met the boy saw the dog perform, and offered the boy five pounds for it. When he got the dog home he found, to his disgust, that it would not do a single one of the tricks for him. He coaxed, cajoled him, and probably kicked him, but the dog would not perform.

Finally, grabbing it by the ear, he took him back to the boy and said: "Here, give me my money back; this is no trick dog." "That so?" said the boy, and then, turning to the dog, he said: "Here, Spot, jump through," and the little dog jumped through the boy's arms. Then the boy made him play "dead," walk on his hind legs, and go through his entire repertoire of tricks, while the man looked on. Finally, with a broad grin, the boy turned to the man and said: "You know, mister, to make this dog do tricks you have to know more than the dog."

Mr. James Watson, L.I.C.A., F.A.I.S., etc.

And this story is related to emphasize the fact that to be an efficient manager it is not sufficient to *know* what the different principles of management are; one must know more than the names of principles in order to be able to apply them.

It seems indeed strange that, even in these advanced days, ambitious young men entering the fields of business fail to thoroughly prepare themselves for the higher posts. Why is it necessary for medical men, lawyers, dentists, etc., to go through a rigorous training, yet it does not on the surface appear necessary for business men to train, other than by experience? Efficient management is just as scientific as medicine or law. The principles are now well known. According to Bradstreet, the well-known

financial agency, 82.4 per cent. of business failures are caused by: Incompetence—Inexperience—Lack of Capital—Unwise Credits—and Fraud. These are needless failures, which the knowledge and application of the principles of management would prevent.

Lack of training in the fundamentals which underlie all business makes men incompetent. It leaves them ignorant of the experience of others, rates them as poor credit risks, and exposes them to all the frauds which prey on business ignorance.

It is not sufficient, however, to know the causes of needless failures; our task is to locate management inefficiency. This cannot be illustrated better than by quoting the report of the Select Committee, appointed by Herbert Hoover in U.S.A. to investigate causes of waste in industry. This committee found that management was responsible for more than 50 per cent. of the following—"Wastes in Industry": (1) Faulty material control; (2) faulty design control; (3) Faulty production control; (4) Lack of cost control; (5) Lack of research; (6) faulty labour control; (7) ineffective workmanship; (8) faulty sales control; (9) ill-health and accidents.

Having seen that management is far from 100 per cent. efficient, the question naturally arises—"What is efficient management, and why must industry have efficient management in order that the nation may prosper?"

Management has been defined as "The art and science of preparing, organizing, and directing human effort applied to control the forces to, and utilize the materials of nature for the benefit of man."

The more extensive and complicated business becomes the greater is the need for management. The growth of industry is not limited by lack of capital, for capital can be had to back any undertaking which demonstrates that reasonable profits can be made.

Neither is industrial growth limited by labour, for this can be had if wages are high enough.

Automatic machinery can be invented where the number of workers becomes insufficient.

But nothing can be substituted for the organizing, directing, and managing mind. There is no substitute for the man who brings together and keeps going the elements of production—Capital and Labour, and the element of consumption—the buying Public.

Only recently one big Sydney firm spent eight months looking for the right man to manage its business. This firm was offering £2,000 per annum. Their problem was not financial, not a lack of labour, not a lack of markets for their products.

In the preparation, organization, and direction of human activities management has to deal with a number of forces, such as nature, labour, capital, the State, and the consumer. The utilization of these forces brings about the necessity of paying for the services they render. This is expressed in forms of rent, wages, interest, profits, taxes, etc.

The first public recognition of the desirability of collecting data regarding management practices, so as to be able to formulate definite laws upon which management could be based, was in the address of Henry B. Towns, in 1886, before the American Society of Mechanical Engineers.

In his paper, entitled "The Engineer as an Economist," he clearly showed how necessary it was, in order to ensure good management, that there be joined to executive ability the "practical knowledge of how to observe, record, analyze and compare essential facts in relation to wages, supplies, expense accounts, and all else that enters into or affects the economy of production and the cost of the product."

Following his suggestion, many prominent engineers and industrial executives began to study the art of management in order to find out its laws and governing principles, and, as a result, to-day we can classify management as both an art and a science.

The benefits not only to industry and commerce, but to the worker and the community, from the application of management principles are far-reaching, as the following summary clearly shows:—

Benefits to the Employer:

i. Decrease in the cost of production.

ii. Labour troubles are eliminated or reduced to a minimum.

iii. Increased output is obtained with-

out increasing the investment in real estate, plant or equipment.

iv. An improved quality of product is obtained.

v.Prompt deliveries are assured.

Benefits to the Worker:

i. Higher wages are secured.

ii. Steady employment is secured.

iii. Elimination of fatiguing work is secured.

iv. Greater satisfaction is derived from the work.

v. The worker is broadened in every way.

Benefits to the Community:

i. Decrease in the cost of living, because of lower prices which result from increasing the production, decreasing costs, and eliminating waste.

1. Increase in values both in regard to quality and quantity.

iii. General business conditions are benefited; there is more money in circulation, as the increased wages and decrease in prices made possible by efficient management enable the workers to secure more luxuries and pleasant things of life.

iv. Fewer failures; most failures, as was shown earlier, are due to ignorance or failure to make use of the principles of management.

v. All of which means better citizens and greater contentment.

Analysis shows that management has to do with five out of seven of the prime factors in industry—Buildings, Equipment, Organization and Methods, Orders, Materials. Capital has to do with one—Money; and labour with one—Work accomplished.

On management rests the responsibility for teaching both capital and labour the real facts as to industrial competence, of the relation of service in work to final results, of the relationship between both, and the sameness in the ideals.

Australia is hungry for ability, for initiative and brains to efficiently manage its industrial and commercial enterprises.

The means to train our young men is here. Efficient managers, like efficient lawyers, have to be trained. Let our younger men prepare, and they will find the golden plums awaiting them.

J. H. Kirkwood, the Australian golf champion, training at Sandwich, England.

THE HERMIT OF COTTER'S RIVER

ROMANTIC STORY OF THE FEDERAL CAPITAL

LIVING THE SIMPLE LIFE

By THEO COX

NINETY years ago, before Melbourne was founded, before South Australia was sliced off; when the bow and arrow and the boomerang were more in general use as weapons of war than any firearm; before the colony of New South Wales was divided into parishes; at a time when there were no laws, but merely regulations or instructions from Downing Street; when free grants of land were given to any daring person who would accept and work them—in those far-off days there dwelt a man of strange demeanour on the frontier of Monaro, now the south-western wing of the Federal territory. This man, whose name will ever live in Federal history, was found most unexpectedly. Three daring spirits, fired by the exploring feats of Hume and Mitchell, were miles and miles away from civilization when they were startled by signs of habitation. From the top of the huge precipitous mountain whereon they stood, looking for the wonders of the world, they saw below them, disporting on the rocks, not strange, wild, unknown animals, but —children.

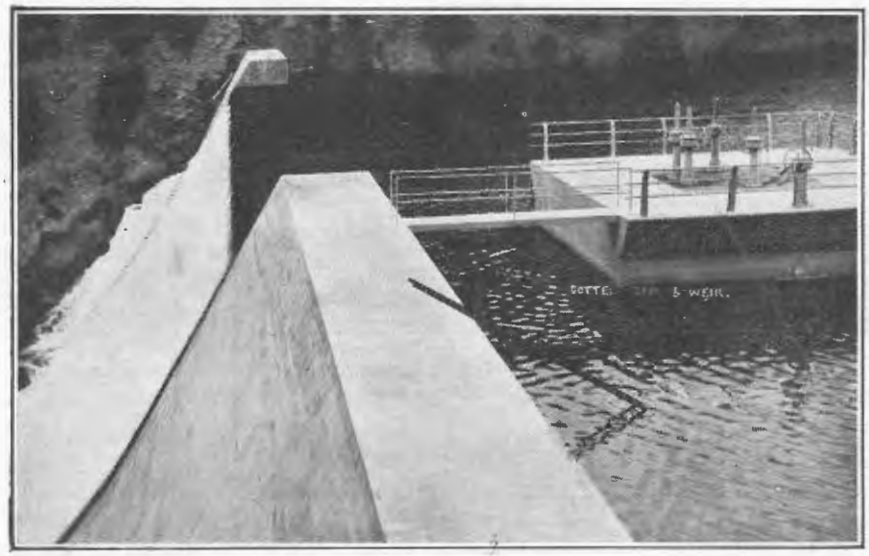
Reduced by the distance, they resembled ants running hither and thither. The travellers descended to investigate. They found a man, his wife and family existing there—existing is the only word. There was no house, not even a bark hut. Partly in the open and partly under an overhanging shelf of rock, open in front and partially closed at the two sides in a semi-cave, this little group of colonisers led a caveman's existence, and they were probably proud of their rocky gunyah or marble Mia-Mia. This isolation was purely a matter of deliberate choice, for the man was a recluse; not a religious recluse, fearing God's wrath, nor doing penance for a deadly sin; he was no escaped convict or

The Cotter River, just above the Weir.

run-away assigned man hiding from his captors; he was no brigand of the bush living on the depredations of his neighbours (for he had none) or the passing passengers (for the road was leagues away); he was doubtless a derelict of life, stranded far away from any of its currents, and too sore in soul to struggle to the stream. How he earned his living none of the old hands ever knew. Food there was in plenty—fish from the tiny stream close by; birds to be caught in hundreds by smoking the trees at nightfall; milk from his Angora goats; eggs from his fowls; meat from the pikers (wild cattle) o'er the ledge; manna from the gum trees; hats and "pake" (a kind of mat) dress from the plaited leaves of cabbage trees—and Life was Paradise There were no newspapers; no telegraph or telephone; no laws to break; no police to fear; no neighbour to quarrel with, and no one to offend. Life was just a Garden of Eden. Freedom yet had grown no spurs Old Liberty was still the king! The harness of civilization left no one girth-galled or collar-marked.

Settlers quickly started nearer to this "hatters" home, and these men were mightily mystified by Cotter's crib. His strange life caught their imagination, starving for some mental food. His mystery was ever on their tongues. Here, or hereabouts, was the source of a river. Whenever the question was asked, "Where does that river rise?" the answer always was "Up at Cotter's," and the name of "Cotter" became welded to the river that is to supply the wonder city, Canberra, with its water.

Never will there be any danger of its pollution or defilement. From its source in the springs amongst the snow-clad hills right on to the newly-made dam the water comes down between high and very steep cliffs, through mountainous country so frightfully rough that stock cannot roam on its sides, so that no mud or dirt or filth from animals of any kind can wash into and pollute it. It comes along a clean channel, undefiled, direct from the springs of the melted snow into the conduits as pure as at its source. The capital city need fear no shortage of water, for the Federal territory has rivers to spare—the Murrumbidgee, the Molonglo, the Queanbeyan, Gininderra, Gudgenby, Gibraltar, Naas, Paddy's and tributaries innumerable. The Cotter is thirty miles long, and is joined by Paddy's River just before it tumbles into the Murrumbidgee, which lays on the Federal territory like a sash. The Murrumbidgee in its turn joins the Murray, which flows through New South Wales, Victoria and South Australia, the three great jewels in the Commonwealth crown.



Cotter Dam and Weir.

WORLD'S SADDEST CEMETERY

THE GRAVES ON NORFOLK ISLAND

A GRAPHIC PEN PICTURE

By H. C. L. HIBBS

Norfolk Island.

IT was sunset as I stood on the shore of one of the lonely islands of the Pacific. The day had been perfect, and with that rare perfection which comes so seldom, even in this most favoured region, the sea breeze tempering to a nicety the warmth of the brilliant sunshine. But the day had come to an end, and as I slowly walked along the shore road nature was preparing for me one of the most exquisite pictures I had ever seen, for the sea, reflecting the ever-changing hues of the sky, was here a shimmering mother of pearl, there an indescribable pink; nearer, where a shaft of fire from the departing sun glanced through the clouds, struck the sea into flaming red, and, resting on the bosom of this pearly sea, were two little uninhabitated islands, Nepean and Philip Island.

At a very short distance from me a cow whale and her calf lay spouting and tumbling about in delicious enjoyment of the calm warmth of the water, and further off two snow-white sea birds winged their mysterious and silent way. Away to the south and east lay a solid mass of blue-black cloud, forming a striking and sombre background to a never-to-be-forgotten picture.

And very lovely also is the remote and tiny spot of land which lay behind my back —historic Norfolk Island, of which, perhaps, more some other day. Below me, between the road and the sea, lay the graveyard. No ordinary graveyard this, for I know no other burying-place in the world that has such strange and tragic associations. Let it not be forgotten that Norfolk Island was for many years a penal settlement, and those who have read Marcus Clark's book "For the Term of His Natural Life" will recall only too vividly the merciless floggings and tortures imposed upon helpless men, women and even children, and will understand

why this cemetery, which contains the bodies of the victims, should impress one with such a feeling of pitiful horror.

Here, then, lie, in the older part of the cemetery, the defaced mortal remains of those whose crimes merited punishment, but to whom the abuse of authority meted out incredible severity, making of them despairing desperate monsters. Even these poor wretches deserve a commiserating thought, but what shall be said for those who, guiltless of any crime, were the victims of an error of judgment, of treachery or of malice? The rest in death from the daily torment of their lives, which they longingly schemed for, and often accomplished, is theirs. To them this beautiful island was known as the "Isle of Despair," "The Island of Death." To be sent here meant an end of life—from home, which even to the meanest means so much, and in place of it cruel fetters which ate deep into the flesh, barbarous floggings, which mangled the body and broke the spirit; ceaseless labour. What wonder, then, that poor, lost souls, innocent of any crime, or convicted of crime which was almost a virtue—the theft of food to feed a starving family—should be goaded to the madness of revenge on their tormentors and, in revenge on them, seek deliverance in death for themselves.

"J.R., Executed for Rebellion"; "W.G., Executed for Rebellion." So run the epitaphs, cut in rude stone. But most of the convict graves have no headstone to record the owner's name and fate; which is perhaps as well.

Just outside the graveyard fence on the seaward side is a spot that no one likes to look upon; it is just such a hole as one would dig in which to bury a dead horse. Here lie sixteen poor wretches, convicted of the murder of an inhuman overseer. They were made to dig their own grave, were slaughtered, thrown in and covered up. The deep depression in the ground shows that the latter part of the work was ill-performed, but what matter, they were only convict dogs; yet each one of these poor fellows was at some time loved and mourned over.

Gray, when meditating in the quiet English churchyard on the lives of those who lay peacefully around him, was moved to pity because the denial of opportunity had been their lot.

Perhaps in this neglected spot is laid:
Some heart once pregnant with celestial fire;
Hands that the rod of Empire might have swayed,
Or waked to ecstasy the living lyre.

Yet, his poor parishioners, stunted and hard as their lives were, enjoyed many compensating circumstances. They had their homes, their loved ones, their accustomed work with its reward, such as it was, and above all—that which the humblest English labourers are so tenacious of —their characters. But the lot of these poor convict fellows was infinitely worse. Many of them no doubt began life in innocent happiness, but evil was too much for them, and when they fell no hand was stretched out to help them, no opportunity was given them for repentance or endeavour after a better life. No, in their fall they lost all that made life dear or bearable, and were cast out by society as things to be gotten rid of or forgotten. The times in which they lived were ignorant, hard, cruel. Since then the people have grasped and obtained much that was denied to their forbears; but it may be questioned whether in the gaining they have not lost much—self-respect, a sturdy independence, and a spirit of loyalty.

When Norfolk Island was abandoned as a penal settlement the convict records were almost all destroyed. Why? But from what few records remain we know that the island was used for this purpose for about 55 years, and that there were at times as many as 3,000 prisoners here. Death must have recived his full toll during this period, yet there is no evidence of any great number of prisoners having been buried in the cemetery. Apparently they were shoved underground anywhere.

On little Nepean Island, a bare, desolate few acres, a short distance from the shore of Norfolk Island, lie three human skeletons. They have lain there for sixty odd years. What awful thing happened to them? Were they placed there to die of starvation and exposure, or were they summarily killed by some irate or vindictive official, and in careless indifference left to moulder where they fell? What-

ever their fate may have been, their bones lie exposed as a witness to appalling brutality. When the Pitcairn people came here, and discovered the gruesome remains they treated them with pitiful respect, forbidding anyone to touch them.

An awfully sad place this Isle of Death must have been in those days, for the King of Terrors was busy also among the rulers. Standing side by side are two large and massive monuments, one of which records that Captain, the Honorable John Charles Best, 50th Regiment, was drowned while crossing the bar, 1840. The other, that of John McLean, Esq., Superintendent of Agriculture, was drowned at the same time. This bar, or reef, at the entrance to Kingston is a dangerous place, as many other more humble headstones indicate.

And many bitter tears must have been shed over the graves of the little ones laid hereunto rest, children whose family names are well known in Britain. Their monuments, elaborate and costly, are falling, like all the others, to decay. But of the number two are just barely decipherable—George Winter William, only child of George and Fanny de Winton, 1850, and ——, daughter of Captain Hamilton, Royal Engineers, aged 3 years, 1840.

A few years later than the datas just mentioned—in 1855—the dreaded convict station was evacuated. A year later, in 1856, the descendants of the mutineers of the *Bounty*, to the number of 180, were, by their own consent, brought here from Pitcairn Island. The history of the origin of these people is full of tragedy, and is fairly well known; and to the thoughtful observer their present condition is truly pathetic. But I am not now writing of the living, but of those who have gone to their long rest. But few of the original Pitcairners who were brought here are alive now, the others, with many besides, who bear the names of Christian Young, Buffet, Nobbs, Quintal, Adams, McCoy, lie in the larger portion of this burying ground. Though lacking the trim orderliness of the usual cemetery, the people give much care and attention to the graves of their relatives, and many beautiful flowers testify to loving remembrance.

The darkness of oblivion is fast closing down over the remains of these unutterably sad stories; but through all the darkness there shines a ray of hope for all these lost souls shall at last come before Him, whose justice is perfect and whose mercy is infinite.

Mattai Mountain, Wollondilly River.

The TRAGEDY OF SAM MERRIMAN A.B

A Story of the South Pacific

BY JAY MELBOURNE

"HE'S out, sir, he's out," piped little Tim Lloyd, the first-voyage boy of the watch on deck.

"Who's What? Not Merriman?" roared the mate, disturbed at his pre-breakfast wash.

"Yes, indeed, sir," answered Tim in his excitable Welsh manner. "He's just climbed out of the fore peak hatch, and Old Jones and Big Martin and——"

But the mate waited for no more. Wiping his wet face on a bunk curtain, and reaching an automatic from beneath his pillow, he was away for'ard as fast as sailor's legs could take him, for Sam Merriman was mad, a raving religious maniac, and had evidently escaped from the irons with which he had been secured for safety overnight.

* * *

It was during the first watch the previous night that Sam Merriman, A.B., had suddenly lost his reason.

He was a good sailorman, and of a quality far above the fo'c's'le plane. Maybe, for aught anyone knew, a man with a past such as we find sailing before the mast of many a British windjammer.

Merriman had joined the *Granite Vale,* a well-found Glasgow barque, Captain Pallett, in Liverpool, and was one of the few members of the original crew left in the ship after being two years out from home.

At no time during the voyage had his actions given warning of his sudden lapse into religion, which lapse, thought apparently safe at first, was manifested in a loud holding-forth from beneath the break of the poop.

Sam's haranguings to the watch on deck quickly brought upon him the wrath of the officer of the watch, and as he refused to "let up there," as the mate put it, and became violent at attempts to restrain him, the skipper had perforce to order him into irons.

After a wild and prolonged struggle, which labelled both Sam and his arresters with bruises and similar marks of distinction, into irons he was clapped, and manacled and lashed for safety in the for'ard peak.

How Merriman loosed his irons must ever be a mystery. The fact remains that when the "Yankee schooner" bosun, Nelson, who had been signed on in Newcastle to handle the bobtailed crew who had been shipped in a comatose alcoholic condition in that port, lifted the peak hatch at seven bells to bring up a wire pennant he found Sam at the top of the ladder chuckling maniacally.

Instantly the bosun retreated strategically to the donkey-room to grip something heavy, thus permitting the maniac to reach the deck armed with a length of block pin iron and a three-cornered scraper.

At this stage Old Jones and Big Martin tried out a little diplomacy.

Backed by his big shipmate, Jones, a close pal of Merriman in the latter's sane moments, rolled his little fat ball of a body out of the port fo'c's'le door just as Sam drew level.

"An—Sam, do'ee feel any better wheffer this mornin'?" he queried.

"The Lord," pronounced Sam, "the Lord calls. Come."

And he dived at his old shipmate with the three-cornered scraper, generating in the little fat sailor a speed he had not exhibited for many a year.

Away amidships he waddled, a large V rip in his dungarees bearing witness to the accuracy of Sam's dive with the scraper. Then aloft into the main rigging, panting and straining, dodging the "lubber's hole," he scrambled.

Big Martin's haste, although not induced by actual contact with the madman's scraper, was no less marked than that of his little fat watchmate.

The big fellow steered a direct and speedy course to the galley door, with Sam slithering under his counter.

Feeling Sam at his heels, Big Martin tarried not, but dived through the opposite door of the galley on to the starboard deck, where he rolled in the scuppers in the apparently affectionate embrace of the nigger cook whom he had collected in his hasty passage.

Finding nothing and nobody of momentary interest in the galley, the madman added the cook's long, pointed knife and meat chopper to his armament, and grinned his maniacal way on deck again, whereupon all the for'ard hands, who had by this time mustered about the forehatch for safety of numbers, scattered like a shoal of flying fish before a dolphin.

It was at this juncture that the mate arrived for'ard, to find Sam Merriman commander of everything in sight, with only a stray head or two poked cautiously above the for'ard fife rails or around the deckhouse.

Ignorant of the failure of Old Jones and Big Martin, the mate decided on diplomacy, too—at least, for a start.

Moving towards Sam he cooeed: "Well, Merriman, you've certainly scared seven bells out of the men. What have they been doing to you?"

"Come along aft, old man," he suggested, as Sam turned and glared with his saucer eyes, "and we'll get you something hot and strong to drink. There's a piece of tinned sausage looking for a good man, and———"

The mate's nerve failed him here. Diplomacy was off as Sam lurched towards him, both hands outstretched, bringing the scraper, pin bar, cook's knife and meat chopper so close as to raise a doubt in the mate's mind as to his physical welfare.

Sam accompanied his movement with a hoarse "YOU——," gurgled deep down in his throat. Just that one word, which may have meant a welcome to the tinned sausage. Had the mate so interpreted it this story of the high seas might never have been written.

But it may have spelled danger, and the mate can be excused for accepting it as such, confronted as he was by that wild, fiendish expression and the battery of sharp-edged, discomforting weapons that formed an advance guard to it.

He promptly put a couple of shots over Sam's head, hoping to frighten where he had failed to cajole, an ill-advised act indeed, as the madman's quick response to the shots proved.

Merriman's eyes threatened to start from their sockets, as, for a moment, he glared more fiendishly, more madly than ever.

Then he laughed the wild, reckless laugh of an unconquerable demon, and moved slowly, smoothly, like a great cat, straight at the mate.

Those shots had started a procession that led to the capture of the madman and the tragic happenings that quickly followed.

Off moved the mate, moving back along the deck, automatic ready for a rush, keeping pace with Merriman, whose eyes

still glittered with the spirit of that awful laugh.

Silently, smoothly, the pair moved across the break of the fo'c'c'le head, abaft the windlass, and then aft down the port side, their eyes denoting a fight for mastery. One might have expected the madman to rush upon his proposed victim rather than stalk him, but the insane mind is guided by an inconceivable cunning and intuition.

Merriman knew that a wild rush at the mate would bring a dozen men upon him from behind, for the crew, recovered from their immediate surprise, were following the procession at a safe distance, waiting and watching events.

More than one or two of the more daring of the men essayed to get into a safe attacking position. A couple even climbed on top of the for'ard deckhouse, hoping for a chance of dropping on to Sam.

But the madman indicated by the handling of his weapons that he was quite conscious of their efforts to corner him, and not a chance had any one of them of getting Sam without risk of death or serious wounding.

Meanwhile the procession continued, until the mate and Merriman came abreast the main hatch, upon which the madman leaped and faced for'ard, with every man jack under his immediate gaze except the skipper, second mate, the man at the wheel and the bosun, who had considered himself far safer aft reporting the details to the "old man" than bearing a hand to capture Sam Merriman.

From the elevation of the hatch the madman once again lapsed into religion, and announced to all and sundry his divine appointment.

His loudly-voiced sermon on paradise and the hereafter was accompanied by wild wavings of his accoutrements, as if to hammer home in the minds of his congregation the salient points of his message.

In his enthusiasm he seemed to have forgotten the few men aft and behind him, although a movement on the part of one or two of his congregation to work position was quickly checked by a special flourish of the cook's knife. He was quite sensible to them.

Thus did the second mate, a wiry young Sydney boy, find an opportunity as he came quietly amidships in bare feet.

Around the half-deck, which was placed amidships in the *Granite Vale,* he stole, dropping down behind the fife rails abreast the mainmast. Signalling the mate and men not to look intently in his direction, and so distract the madman's attention, he crouched ready for a quick leap. And just one leap it had to be—sure, perfectly judged—otherwise, the knife or meat chopper for his portion.

With a remarkable spring he cleared five feet of deck, lightly touched the hatch combing, and continued the leap high in the air, landing well up on Sam's shoulders and bearing him to the hatch before he had time to turn at the sound of the rush. Half-a-dozen men quickly jumped to the second mate's assistance, spreadeagling Sam on the hatch, pinning arms and legs, and depriving him of his weapons.

And how he fought and fought. It was a full-sized six-man job to hold him; but they had him down now, safe, fast tiring under their united weight—and defenceless.

And then—that coward's blow.

The blood gushed from Sam's neck as the bosun, white-livered cur, and disgrace to his calling, who had slunk along after the second mate, delivered a blow with the three-cornered scraper that had been taken from the madman.

That sudden, cowardly and wholly unnecessary blood-letting cost the bosun his life but a few minutes later, and probably provides an explanation to the final chapter of this story.

Merriman's struggles ceased as he lay limp and quivering from the blow, his head moving slowly from side to side, low moans of pain coming from his lips.

Before he could recover the men seized the chance of manacling his wrists, while the second mate endeavoured to staunch the flow of blood with the sleeve torn from his own shirt.

Gradually the blood flow ceased under pressure of the second mate's fingers. Slowly the madman recovered, until he was able to sit up on the side of the hatch, while the second mate bound his neck with the other shirt sleeve.

Then Merriman's hands went gingerly up to his neck and, as his fingers touched the warm blood that was slowly soaking the new bandage, the recollection of the blow seemed to come to him in a flash.

The wildness reappeared in his eyes as he glared wickedly and squirmingly among the men around him, until he saw, on the fringe of the crowd, the slinking coward who had struck him as he lay defenceless. Springing to his feet and jumping back on to the hatch with a one lightning movement, he bent down and picked up the cook's long, pointed knife, that had been left lying there after the men had taken it from him. No hand had been quick enough to even interfere with his action—nor did he hesitate now. Leaping from the hatch with the wicked-looking knife held aloft, he went straight at the bosun, scattering to right and left the few men who stood in his path.

Seeing that no human hand could restrain this madman, now raised to wildest fury, and feeling the vengeance that was bearing down upon him so quickly, the bosun turned and flew aft for his life, screaming as he ran, "Drop 'im, sir, drop 'im."

But the mate, though he quickly realised the necessity of taking this one life to save Heaven knew how many others, could not get a clear shot at the madman as the pair raced along the deck. The couple of shots that he did risk went wide of the mark, and failed to stay the awful tragedy that followed

Up the poop ladder went the bosun, with the madman close on his heels. Just for one moment did Merriman pause as he reached the top of the ladder. Dashing the chain of his old-pattern handcuffs across the rail, he sprung the locks and freed his hands. Then after the bosun again.

Unfortunately for himself the coward had failed to cross the deck abaft the binnacle in his excitement, and had rushed straight to the after poop rail, where he was now cornered between Sam and the wheelbox, across which he promptly essayed to clamber to temporary safety.

But mad Sam leapt up at him with catlike swiftness and grabbed him just as he reached the top of the wheelbox. There the short and terrible struggle for life started and finished. Before the helmsman could act or bear a hand in any way to assist the bosun the pair went, fighting and kicking, over the after rail, and disappeared in the wake of the ship.

It needed no cry from the man at the wheel to bring all hands aft. Already, as the pair went overboard, the two mates and the men from the main hatch were tumbling up from below.

Captain Pallett was just in time to see the end of the struggle as he appeared at the charthouse door with an old Colt, prepared to take one life to save another. And there were Sam Merriman and the bosun disappearing astern at the steady eight knots the ship was making. Even as they looked they saw the bosun throw up his hands and sink beneath the waves.

Sam Merriman, apparently a good swimmer, was striking out for the shore and rapidly disappearing in the morning mist.

It was no moment for thinking. In the name of humanity, in accordance with one of the greatest of British seafaring traditions, an attempt must be made to save the men or recover their bodies from the sea. Yet, with the ship close inshore and a steady breeze blowing right off the sea great care must be taken lest the ship itself and the lives she carried be endangered.

But Captain Pallett was a good old British seaman, and equal in thought and act to the occasion. Almost immediately he roared his orders: "Down royals and to'gallants, Mr. Marford, and work men! For heaven's sake put your weight into it. Clew up the courses lively and get your mainyard aback."

The mates were already rushing their watches to their respective stations.

"You boys, get that starboard lifeboat cleared; and move, my lads, move," continued the skipper. And he placed himself alongside the binnacle to direct the man at the wheel.

In an incredibly short space of time the orders were executed, and the lifeboat, manned by four men, dropped into the water. In a trice she was cast clear, and a few seconds later was lost to sight in the morning mist. Meanwhile the *Granite*

Vale stood out to sea, with royals and top-gallant sails filling again and her yards trimmed close to the wind.

The depleted crew had a busy time before the *Granite Vale* picked her lifeboat up again. Several times did she run out, go about, and come inshore without success, until the skipper ordered the foghorn on to the fo'c's'le head. At last, just as Captain Pallett was becoming anxious for his lifeboat's crew, the welcome blast of the mate's whistle answered the foghorn, and the lifeboat was soon alongside and hauled up on its skids with the mate and his men safe and sound—but no bosun, no Merriman.

"Well, Marford, no sign of them?" queried the skipper.

"No, sir," replied the mate. "Not a sign of either of the men. We went straight for the spot where we reckoned the bosun disappeared, but found nothing. He evidently went straight to Davy Jones, poor devil. But, 'tween you and me, sir, I reckon he deserved it."

"As for Merriman, well, we pulled inshore, changing our course time and time again, as a mass of weed, a wave cap, or some floating object attracted our attention, but no sign of a man, dead or alive, did we see. It's good-night to both of them, sir. That seems pretty certain," observed the mate.

The tragedy was duly logged, and the effects of the lost men auctioned among the crew, the proceeds being placed, with pay due to date, to the credit of their next-of-kin.

The captain's report to the Consul at Tal Tal when the *Granite Vale* arrived. . . . . The Consul's report, in due course to the shipping office at home. . . and the tragedy of Sam Merriman's madness were relegated the past; an adventure, to be tucked away in the minds of the ship's company wherewith to beguile the hours of the night watches on future voyages.

* * *

Some three years later the *Granite Vale* made the west coast of South America again, and lay out in the harbour of Valparaiso. She had just dropped her anchor, and the crew were still frapping up the gear and clearing the decks generally when Tim Lloyd, now a fine young seaman, and second mate of the ship in which he had served his time, noticed a boat making towards her.

"Boat coming alongside, sir," he reported down the charthouse companion. "Looks like a port official."

And a port official it was. A naval man, really, a tall, well-set-up man, not nearly so swarthy as the crew who plied the oars of his spick and span cutter.

Bringing his boat alongside the gangway of the *Granite Vale,* he spoke a precise order in Spanish to his coxswain, and ascended the ladder to the ship's deck, as Captain Pallett, still in command of his old ship, left the charthouse to greet him and learn his business.

"Great heavens Merriman" gasped the skipper, stepping back, dumbfounded, as the official arrived on the poop deck.

"Senor Mermane is my name. Captain Pallett I believe," he asked quietly.

"But, good heaven, Merriman, you remember three years ago? That blow? That awful struggle? That long, long swim to eternity, as we thought? Speak, man, speak! What chance brings you here?" continued the captain.

"Senor Mermane, if you please, Captain Pallett," continued the visitor quietly.

And then, issuing the instructions re the anchorage, which duty had brought him to the ship, he bade Captain Pallett good-day, and departed as quietly and deferentially as he had come.

"Howling southerlies!" mused the skipper, still knocked flat aback by this unexpected meeting, and watching the fast-disappearing cutter. "I'll swear that's Merriman. But how? and why?"

Captain Pallett happened to be a member of an order, the universality of which is evident in even such little-known and less-understood parts of the world as the small South American ports. Through this association he was able to make enquiries ashore and gain information which certainly shed a great deal of light on the mystery of Merriman.

It appears that Merriman had been picked up more dead than alive in a state of high fever by a small fishing boat, sailing south, and close inshore. Tattooed

designs on his body had indicated his association with this same order, and had gained him every care and attention from a hospital doctor in the small port to which the fishermen brought the sick man. Careful nursing had evidently brought him back to life again, and, apparently, normality. He had not, as far as the captain could find out, given any details of his terrible experiences. His undoubted culture, a good knowledge of the Spanish language, which he had developed from numerous visits to the West Coast ports, and a seagoing master mariner's certificate, which he held in the name he now claimed, did the rest.

Sam Merriman, A.B., became Senor Mermane, of the Chilian Navy, and no further questions were asked. Questions are not the thing in Chile, as any one who knows that part of the world will tell. His past, like that of many another Britisher, in the out-of-the-way corners of the globe, was a mystery. . . . and Captain Pallett left it at that.

SAINTS AND JACKDAWS.

By MABEL HART.

The jackdaws wheel about the towers
Where saints and kings sit, row on row,
And chatter in the ears of queens
Who lived a thousand years ago.

The kings and queens take little heed
Who sit and stare into the West;
Three hundred thousand suns have died
Since they were gathered to their rest.

And still they wait, while underneath
The prebends pace, the canons pass,
The black-gowned students, all agog,
Haste by to service or to class.

On crowned heads and sacred knees
The busy jackdaws fearless build,
And wheel and call, and go and come,
Till every gaping beak is filled.

The clock tolls out, the chimes are rung,
The housewives hurry o'er the green,
The verger with his ebon stave
Sedately walks before the Dean.

Within, the cloistered bodies lie
Of saints and sinners, row by row,
Their bones are dust, their names are lost,
Their dreams are what no man may know.

When will they rise to tell their dreams?
When will the watch at length be done
Of those who then upon the towers
Shall turn to greet the rising sun.
When void will be the carven seats,
And empty graves beneath them lie,
And torn will hang the empty nests
For which the wheeling jackdaws cry?

The crowd around the ringside at the recent Brookvale Show.
Photo: M. Dixon.

PERSONAL

MR. A. K. TRETHOWAN, M.L.C., managing director of the Farmers and Graziers' Co-operative Grain, Insurance, and Agency Company, Limited, accompanied by his wife, and secretary, Mr. J. T. Pope, returned to Sydney by the *Niagara* at the middle of last month. Mr. Trethowan has been on a visit to Europe, the United States and Canada during the past five and a half months.

Mr. T. J. McMahon, F.R.G.S., the well-known writer and traveller, sailed for China and Japan by the *Arafura* on August 16 on a six months' tour.

Mr. McMahon is a keen observer and an enthusiastic worker in Australia's trade interests abroad, and his present trip is designed primarily to obtain first-hand information as to the future prospects between Australia and China and Japan. In order that Australia may derive as much advertisement as possible from his tour Mr. McMahon has taken with him a large number of slides depicting Australian life, and he will take every opportunity of showing these before interested audiences abroad.

* * *

Sir John Macpherson, the recently appointed Professor of Psychiatry at the Sydney University, was chosen for the position from a list of applicants from Australasia and the United Kingdom. He has already settled down to his work, and as a result of preliminary investigations has made complimentary references to the legislation and work in N.S.W. in connection with mental patients.

* * *

Mr. C. H. Bertie, librarian of the Sydney Municipal Library, returned to Sydney recently, after an extensive tour of the Continent and America, during which he gathered much valuable information regarding libraries and the reading tastes of people of foreign countries. Mr. Bertie was particularly impressed by the fact that in Philadelphia the sum of four million dollars is being spent on the erection and equipment of a new city library.

Block: Bank Notes.

"Gathering Storm," Point Lonsdale, Victoria.

* * *

Professor MacKail, lately Professor of Poetry at Oxford University, is to be invited, on the recommendation of the Sydney University Extension Board, combined with other Australian universities, to deliver a course of lectures in Australia.

* * *

Mr. S. E. Tatham, Manager of the Wireless Press, left by the *Niagara* on August 24 on a business trip to Canada and the United States of America. He expects to be absent from Sydney for about four months.

LORD NORTHCLIFFE PASSES

STRIKING CHARACTER SKETCH OF THE GREAT JOURNALIST

"WORLD'S GREATEST EXPERT IN HUMAN NATURE"

By ISAAC F. MARCOSSON

Few men were more intimately acquainted with the late Lord Northcliffe than that distinguished American journalist, Isaac Marcosson. The two men were close personal friends, and hence Mr. Marcosson was singularly fitted to write a character sketch of the great British journalist. This sketch appeared in the January, 1922 issue of the "American" magazine, and is reprinted herewith. It will be read with interest by all who possess a desire to understand the inner workings of the mind of a strong and remarkable man—for such was Lord Northcliffe. The world in general, and journalism in particular, can ill-afford to lose such an outstanding figure.—Ed.

LORD NORTHCLIFFE spent three sweltering days last July in New York City. In spite of the heat, literally, hundreds of people tried to see him, if only for a moment's interview. On one day alone three hundred persons did see and talk with him at his hotel.

Later he crossed the Continent to sail from Vancouver on his journey around the world. And everywhere he went there was the same eagerness to meet him. It was extraordinary evidence of the interest people everywhere feel in his personality.

The men and women who wanted to see him were of all classes. And their interest was not because he was rich and powerful. It was because he has become rich and powerful through his understanding of human nature. He controlled more than a hundred publications. No publisher anywhere covered such a wide range. He catered to the crowd, for example, through a weekly called *Comic Cuts*. But he also owned *The Times* (London), maker and breaker of statesmen and governments, and representing the last word in the aristocracy of journalism.

How was he able to do it? And what manner of man was he?

When you analyse most worth-while careers you find that the individual involved usually gave a hint of his real fibre in early life. This was conspicuously true of Northcliffe. At fifteen he started a magazine at the school he attended. Then, as later, he did not lack assurance. In the first number (he wrote all the text himself) he made the following announcement:—

"I have it on the best authority that this paper is to be a marked success."

In the second issue he said: "I am glad to say that my prediction as to the success of this magazine has proved correct."

In this childhood episode is revealed something of the Northcliffe formula. He not only girded himself with confidence, but he never went into an undertaking without making it as failure-proof as possible.

I can offer no better example than his launching of the *Daily Mail*. Most newspaper owners acquire a going concern that has a name and some goodwill. But Northcliffe created a new journal and of a new kind. He not only revolutionized British journalism, which had grown lazy with prosperity, by injecting a live wire among a lot of more or less dead timber, but he spent a whole year in getting ready. He scoured the universe for the best men and

he created his own news service. But the most typical thing that he did was to publish his newspaper every day for three solid months before a single copy was sold to the public. Only a few copies of each issue were printed, but they were complete in every detail.

When John Bull finally found it on his breakfast table it had none of the earmarks of newness. This was especially important in England, where a man reads a certain periodical because his father and grandfathers before him read it. The Englishman does not take kindly to experiments. He likes the established thing.

But I have leaped a little ahead of my story. There were two reasons why Northcliffe started that magazine at his school.

One was that instinctively he turned to the printed word. The second was that he knew he would have to become a breadwinner the moment he cast his textbooks aside.

He is the eldest of the fourteen Harmsworth children—his given name is Alfred —and his father was a barrister, who died at an early age. His mother—who is alive and active at eighty-six—is Scotch-Irish, and this strain not only made her famous son volatile and sentimental, but it also qualified him to be a champion insurgent. Like the Irishman in the well-known story, he was born with a protest "agin the Government" already framed on his baby lips.

I believe that Northcliffe was the youngest known full-fledged editor of a paying publication. At seventeen, which was directly after he had left school, he took charge of a paper, which was an offshoot of the *Illustrated London News*. He learned the whole job, from writing copy to the "make-up" of the publication and its distribution. This is why in later years he was able to pick competent subordinates and to deal swiftly and intelligently with technical problems.

Northcliffe started his first great success, after some failures, when he was twenty-two. It was called *Answers*. And here he formulated the journalistic creed to which he has adhered with slight variation ever since. He felt that the one thing after money that people needed most was information. The idea behind this "weekly" was to solicit questions, and then to print the answers. For the initial issue he himself provided all the queries But before the magazine had been on sale two days he had received hundreds. *Answers* proved to be the cornerstone on which the Harmsworth millions were built up.

If I were asked to explain how and why Northcliffe succeeded I should say it was, first of all, because he had courage, persistence and initiative.

Many publishers talk about "printing the truth." Northcliffe did not talk about it, but he did it. The acid test, and, in fact, the only test that applied to news of any kind, was summed up in the three words: "Is it true." If he believed he had the facts he never shrank from printing them.

Knowing this trait in his make-up, you can readily understand how he turned overnight against such men as Lloyd George, Kitchener and Asquith, who, at one time or other, and in different circumstances, he had supported. Whether people agreed with him or not, Northcliffe felt that he was rendering a public service by his attacks. His muckraking did not merely tear down. It also built up.

I once asked Northcliffe to tell me the maxim that had been of most value in his life. He replied: "To foresee is to rule." It is an old saying by Pascal.

Here you have another sidelight on the Northcliffe code. Any normal person may be able to see the tendencies, but it takes genius, or something very akin to it, to predict what will actually happen. Accurate prediction has been almost synonymous with Northcliffe's name. I could illustrate with a score of instances, but a few will suffice.

For example, everyone knows that paper is an all-important financial aspect of newspaper and periodical enterprise. The yearly consumption of paper by all the Northcliffe interests is greater than that of any other printing concern. Owing to the great demand on the forests of the United States, Canada and Scandinavia, a paper famine was no impossible contingency. With his extraordinary foresight, Northcliffe realised that when the

inevitable European conflict should come Sweden would likely be friendly to the Germans and, therefore, a neglible quantity in the paper situation. He, therefore, set about to provide his own paper.

He chose Newfoundland, where he secured a tract of three thousand square miles. There his pioneers laid out the site of a new town on the edge of the wilderness, close to a great waterfall. To-day that giant waterfall has been harnessed, a vast plant has been built, paper and pulp go by private steamship lines to private docks and more mills at Gravesend, and then on to feed the hungry press.

That verdant site, wrested from the primeval forest a little more than a decade ago, is now Grand Falls, second city of Newfoundland in population and importance; a flourishing community, with churches, schools, hospitals, a hotel, bank and a club.

The Northcliffe newspapers were the pioneers in pointing out the German menace. It began with the publication of the *Daily Mail* as far back as 1896. Northcliffe, who had spent much time in Germany, declared, and kept pounding away at it (he was strong on repitition), that the German ambition was to rule the world physically and commercially. He was called a baiter, a jingo and a visionary; but he lived to see himself vindicated when Prussianism ran amok in 1914.

He was among the first to advocate the commercial use of the aeroplane and the automobile.

In 1906, when Northcliffe saw Santos Dumont hop one hundred feet with an aeroplane, he became convinced, not only that flying was the coming sport, but that airmanship would be a great factor in future warfare.

About the time that the Wright Brothers were making their preliminary flights a member of the *Daily Mail* staff wrote an editorial on aviation, saying that it was bound to come, but that it would be long delayed. The next morning he received a telegram from Northcliffe saying: "Stop writing such rot. The aeroplane will come much quicker than you think. Be optimistic about it."

Northcliffe could have retired at forty with wealth, power and station; but he was never satisfied. Boundless energy and ambition spurred him on to fresh achievements. And he liked to surround himself with other men who felt the same spur. One day, meeting a sub-editor of the *Daily Mail,* he asked him how he was getting along. The man replied: "Splendidly, thank you."

"How long have you been with me?" asked Northcliffe.

"Eight months."

"What are you getting?"

"Seven pounds a week."

"Are you contented?"

"Yes, and I have lots of leisure."

"Then you are not the man for me!" replied Northcliffe. "I don't want any member of my staff to be contented on seven pounds a week. You must grow more ambitious, my boy."

In this episode is a lesson for every salaried employee. Men often fail because they are sunk in lethargic content.

Northcliffe pasisonately believed that people are interested in other people. More than this, he maintained that people like to see what other people look like. With an early issue of the *Daily Mail* he stated the British Press by printing a whole page of pictures of personages and events. It revolutionized London newspaper making, which up to that time had dealt most sparingly with illustrations .

Northcliffe's theories about editorship are characteristic. He believes that the conduct of a newspaper should be impersonal.

"When a newspaper controller knows a great many people," he said, "he is the object of as much wire-pulling as the Prime Minister. The more people you know the greater becomes the difficulty of acting impersonally. I see public men only at their offices. If you know only a few people you can strike hard at many. There is a great deal of truth in Charles A. Dana's theory that the newspaper owner must be something of a hermit."

He believed also that the controller of a newspaper "must be more or less an absolute dictator of its policies." When in England, which was rarely, he himself incarnated this centralized authority. He contended that one man alone must be responsible for policy, and that he person-

ally must abide by the consequences. His overthrow of the Asquith Government was a thrilling dramatisation of this idea.

Before this upheaval England's war advisers were an unwieldly group of twenty-three men, whose ideas conflicted. It was like doing business with a town meeting. Northcliffe demanded a small, compact, efficient Cabinet, and he had his way.

But Northcliffe talked to everyone, and learned from everybody. He was surrounded with wise counsellors, whom he trusted. Life for him was an unsatiable pursuit of information. He was as good a reporter as any man he employed; and, speaking out of much experience with him, I can state that he was one of the best interviewers that I have known. He listens and he remembers. This is why he knows what the human being wants to read. But, with all his extraordinary knowledge of men, Northcliffe sometimes made mistakes. He not only frankly admits them, but almost invariably profits by them.

His experiences with the *Daily Mail* were typical. He always held that women have definite economic rights. He not only gave them the largest possible opportunities on his newspapers and periodicals, but made one of them a director of the Amalgamated Press, the company which publishes his magazines.

He launched the *Daily Mirror* as a publication by, and for, women; but it hung fire. In an article entitled "How I Lost Five Hundred Thousand Dollars" he made a frank confession of this failure. He said: "I had for many years a theory that a daily newspaper for and by women was in urgent request, and I started one. This belief cost me five hundred thousand dollars. I found that women do not want a daily paper of their own. It is another instance of failures made by mere man in diagnosing women's needs. Some people say that a woman never really knows what she wants. At least she did not want the *Daily Mirror.*"

Northcliffe converted the publication into an illustrated daily for both men and women, and it became a best seller. He afterwards transferred it to his very able brother, Lord Rothermere.

Don't delude yourself with the idea that Northcliffe's masterful march was along a rosy path of public acclaim. No man in recent years has been so bitterly arraigned. He was stamped as "sensationalist," "yel low journalist," "scandalizer of public and press morals." But he has thrived on his enemies. Fifty per cent. of the hostility toward him was directly due to the jealousy of his competitors; twenty-five to the prejudice born of staid British resentment at what is termed his violation of newspaper ethics; while the remaining twenty-five per cent. follows the wreaking of his terrible power on those that have crossed his path. Like E. H. Harriman, he never forgot an affront, never forgave a wound. He was as sensitive as a woman, and as whimsical.

This man, who wielded the greatest unofficial power in Britain, who recreated a Cabinet, and made the fortune of artist or author with the stroke of a pen, was personally the least known of all the English men of mark. Go behind the curtain that masks him, and you find a many-sided individual.

He was big of bulk, with smooth, mobile, massive, yet boyish, face, not unlike Napoleon's, and with the familiar lock of hair that hangs low on his forehead. His eyes, large and luminous, leapt swiftly from grave to gay. He was a multiple personality, as tender and yielding in repose as he was ruthless and unrelenting in action. He brings his friend Cecil Rhodes strongly to mind.

No living Englishman knew or understood us so well. He talked to Americans in terms of America. When he wanted to illustrate society, for example, he talked of Fifth Avenue and Newport, not Belgrave Square and Mayfair; he linked the Bowery with Whitechapel; Wall Street with Lombard.

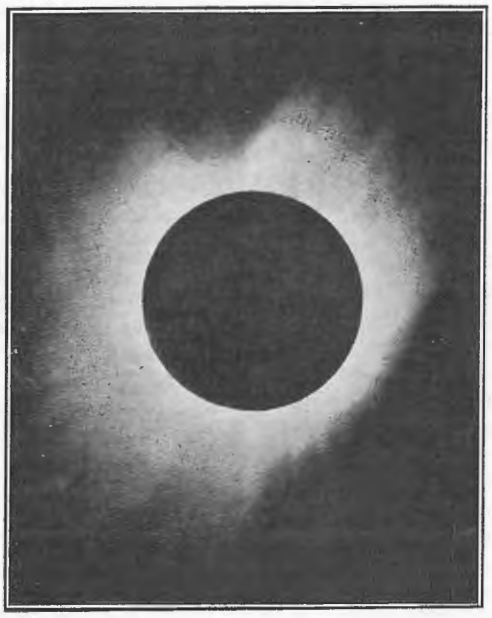
Northcliffe has been called a human steam-roller; but, as a matter of fact, he was very human and very genuine. There was a frank glint in his blue eye and a friendly curl to his expressive mouth. He could be a good friend and a bitter enemy, for he knew no half measures. He talked and walked fast, and had a habit of stopping suddenly and hurling a pointed and pertinent question at you. At fifty-six he was in the prime of life, packed with potentialities that startled the domain of journalism.

THE WONDERS OF AN ECLIPSE

GREAT SPECTACLE PROMISED FOR SEPTEMBER 21

WILL NOT OCCUR AGAIN IN THIS GENERATION

SURELY the present generation has something on which to pride itself when it is remembered that the solar eclipse to take place on September 21 will be the most interesting and impressive natural phenomenon ever witnessed in Australia. And, what is more, a recurrence of this great spectacle will not happen again during the lifetime of any of the present generation. Such knowledge will unquestionably awaken in the breasts of even the most disinterested in our midst a desire to steal away for a few days from the grind of industry and the bustle of city life, and spend those all-too-brief hours observing a sight which they at least will not be privileged to see again. No more opportune part of the year could have been chosen for the staging of this great event, for in September the weather is ideal for holiday-making, the drab days of winter are over, and the blazing heat of summer is still too far off to induce that tired, listless feeling which mars even the most auspicious occasion.



The corona, taken at Sobral, Brazil, May 28, 1919.

This eclipse will be visible as a partial one throughout the whole of Australia, but there are certain favoured points from where it can be observed as a total eclipse, and it is here, naturally, that all who are interested, and can spare the time, will foregather. The closest observation point for Sydney people who wish to view the eclipse in its totality will be between Deepwater and Clifton, on the Sydney-Brisbane Railway. The North Coast holds out the inviting prospect of both an enjoyable holiday and an excellent view of the phenomenon, any point between Grafton and Tweed Heads offering excellent points for observation.

Goondiwindi, in Queensland, has been chosen as the most suitable observing point by the official scientific parties, and here much useful and important work will be carried on right up to the day of the event, in order that science may benefit to the fullest possible extent by the observations taken. It is from this point that it is hoped to gather such knowledge as will go a long way towards either proving or disproving the Einstein theory of relativity, which is considered to be one of the most important questions agitating the mind of the scientific world to-day.

Einstein Theory.

So much is heard nowadays about the Einstein theory that the average person is beginning to wish that he knew something definite and concrete about it.

As might be expected, it is really difficult for the lay mind to obtain a clear grasp of the theory, but it is possible to present the position in such a way as will enable the man in the street to get a fairly intelligent inkling of what scientists are so keenly interested in.

Einstein denies that space or time exist

in realities. He says their existence is only a matter of relativity. In the infinite nothingness you imagine two places, and as size has also but a relative existence, whether as big as the sun in that sense or as small as a pin's head, absolutely they are of the same magnitude. That is, they have no magnitude at all like Eucildean points. Neither have they any location, except in respect to other places, which absolutely are also without size or location except in respect to them.

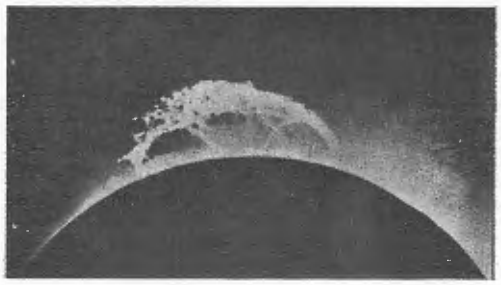
"If Professor Einstein's theory is proved to be correct we will have to revise all our fundamental ideas about time and space and matter," said Professor Chant, of the University of Toronto, when asked his views during a brief stay in Sydney on his way to West Australia to observe the eclipse. "We work on the accepted principle that time and space and matter have an absolute objective existence—that each is independent reality. The hypothesis of Einstein's theory is that they exist only in relation to each other—that there is no absolute time or space or matter. If the location of the stars during the eclipse prove his theory it will mean an absolute revision of our scientific philosophy. There seems to be an idea that if the Einstein theory is proved Newton's theory of gravitation will be disproved. It may be that Newton's theory will have to be considered as only approximately correct, but the broad principle of the theory will stand for ever. The whole development of astronomy has been based upon Newton's theory—even the prediction of this eclipse. If all the observing parties can secure satisfactory observations we should be able to arrive at something decisive on the subject. The measurements that will have to be made are so extremely delicate and the calculations call for such minute exactitude, however, that it might not be possible to obtain wholly satisfactory evidence. If that is the case we will have to improve our apparatus and wait for another eclipse."

What to Watch for.

The first and perhaps one of the most impressive features to watch for is the appearance of a tiny black notch on the edge of the sun. Computations made in recent years have rendered it possible to fix the exact time for any place on the earth along the track of totality at which the "first contact" will take place. These figures will be published a week or two before the eclipse, and will be found to be wonderfully accurate.

If it were possible to isolate from the rest of the world one of the centres at which the eclipse will be observed in its totality the spectacle would be beyond the descriptive power of words. Nothing more terrifying could be imagined than the scene which would result, but happily the many thousands of people who will flock to the various observation centres will be spared the ordeal of witnessing the terrifying grandeur of the phenomenon which is actually occurring.

That little black spot already mentioned will be looked for by parties in various parts of Australia, and on islands in the Pacific. It may be observed by anybody looking through a piece of smoked glass with the naked eye. As the edge of the



The solar prominences taken at Sobral, Brazil, May 28, 1919.

advancing moon (otherwise the black spot) spreads across the surface of the sun many sun spots will be visible, and it will be interesting to compare the relative blackness of moon and spot. In about an hour the edge of the sun will be reduced to a thin crescent like a new moon, and the next three of four minutes will be full of interest and activity for observers. It will be impossible for any one person to take in all the points, and hence it is necessary to map out a programme beforehand and stick religiously to it. Those who wish to observe "shadow bands" are advised that these occur a few minutes or seconds before the commencement, and, perhaps, just after, totality. For their observation a white sheet spread on the ground, or, better still, a blank white wall facing the sun is required. The bands consist of a series

of bright lines and dark circles moving steadily forward. They offer a fruitful field of observation for the amateur, and those who undertake it are advised to note the distance apart of the bright lines, the direction in which they lie and move, and the rate of movement.

If the observer is on an elevated site it is worth while watching the approach of the moon's shadow from the westward, and perhaps it will at the same time be possible to visualize the awful splendour of the phenomenon so eloquently described in the following passage from Todd's "Total Eclipse of the Sun":—

"Then with frightful velocity, the actual shadow of the moon is often seen approaching, a tangible darkness advancing, almost like a wall, swift as imagination, silent as doom. The immensity of nature never comes quite so near as then, and strong must be the nerves not to quiver as this blue-black shadow rushes upon the spectator with incredible speed. A vast, palpable presence seems overwhelming the world. The blue sky changes to gray or dull purple, speedily becoming more dusky, and a death-like trance seizes upon everything earthly. Birds, with terrified cries, fly bewildered for a moment, and then silently seek their night quarters. Bats emerge stealthily. Sensitive flowers, the scarlet pimpernel, the African mimosa, close their delicate petals, and a sense of hushed expectancy deepens with the darkness. An assembled crowd is awed into absolute silence almost invariably. Trivial chatter and senseless joking cease. Sometimes the shadow engulfs the observer smoothly, sometimes apparently with jerks, but all the world might well be dead and cold and turned to ashes. Often the very air seems to hold its breath for sympathy; at other times a lull suddenly awakens into a strange wind, blowing with unnatural effect. Then out upon the darkness, gruesome but sublime, flashes the glory of the incomparable corona, a silvery, soft, unearthly light, with radiant streamers stretching at times millions of uncomprehended miles into space, while the rosy, flaming protuberances skirt the black rim of the moon in ethereal splendour."

During the time this is happening, or just as the tiny crescent of the sun is disappearing, those who possess telescopes should look for the appearance known as "Baily's Beads." Reliable observations of this phenomenon are greatly desired. Contrary to expectation, the crescent does not close up uniformly, a few filaments of fine, dark lines seem to suddenly dart across the bright space, and almost immediately the crescent assumes the form of an irregular string of beads. Just before the moment of disappearance it resembles nothing so much as a brilliant pearl necklace.

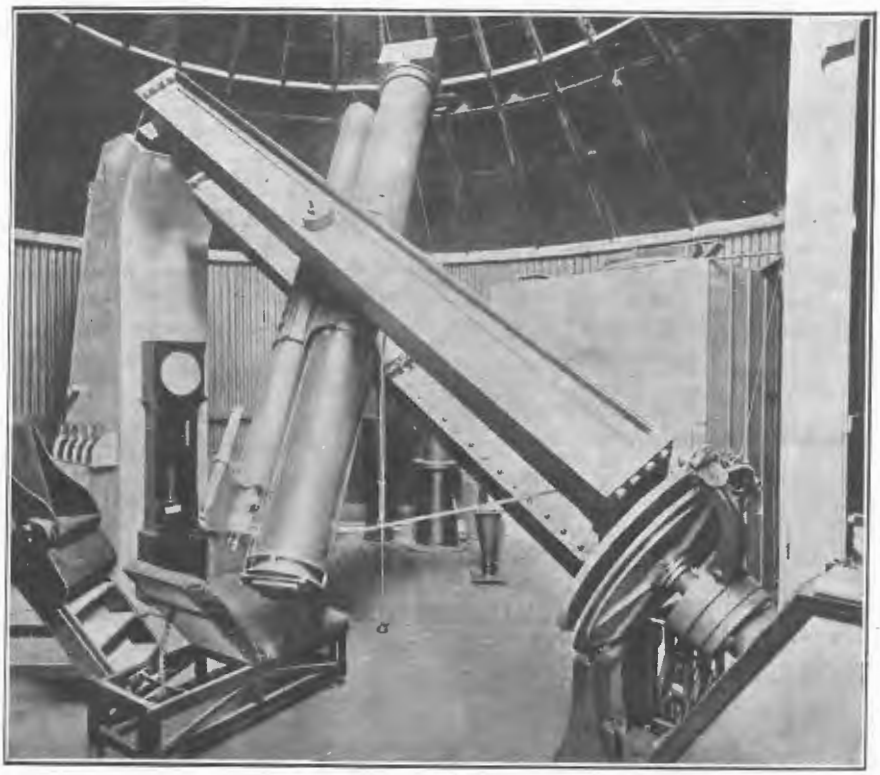
During the period which will elapse between the commencement of the eclipse and the time when the sun is fully covered many remarkable things will occur. If any of the frequent outbursts of burning hydrogen are in progress at or near the sun's edge they should be visible during totality. They may appear like little peaks or mountain chains of red fire. As a matter of fact, any one of these is large enough to engulf the earth.

When Eclipse is on.

When the eclipse is fairly on the black body of the moon is seen projected against the sun's corona. This is the moment for which every observer has been waiting and it provides Nature's most magnificent spectacle. The duration is only about 3½ minutes, but while it lasts it will be so weird and fascinating that people will simply gaze at it with naked eye, field glasses or telescope, and then, before they realize it, the whole performance will be over.

But the scientists will make full use of those precious three and a half minutes, for it is what is going to be observed during that brief period that has brought some of them half-way across the world at a cost of many thousands of pounds. When totality of the eclipse is over interest is on the wane, but it will still be possible to observe the moon's shadow rushing eastward over the earth's surface, and the shadow bands and "Baily's Beads" will still be visible.

In Sydney a large partial eclipse only will be visible, the maximum proportion of the sun's surface to be covered being 86 per cent. *It will begin on the afternoon of September* 21, *at seven minutes past three, and end at twelve minutes past five, the greatest phase occurring at thirteen minutes past four o'clock.*



The great Star camera of the Sydney University, which has been moved to Goondiwindi to observe the eclipse.

Preparing for Observations.

Professor Cooke, Government Astronomer of New South Wales, has made elaborate preparations at Goondiwindi for observing the eclipse, and has transported there much valuable apparatus. One instrument already erected there is a photoheliograph, with which it is proposed to take a large number of photographs of the eclipse from beginning to end. It is proposed to take accurate time observations, and for this purpose arrangements have just been made with the Washington Naval Observatory to transmti Greenwich time at midnight each night on the ten days immediately preceding the eclipse. These transmissions will be from the new and powerful radio station at New York. With the aid of these signals it is hoped to determine the longitude of Goondiwindi with great accuracy, while observations will also be carried out for determining the latitude with similar exactitude. A large telescopic camera, known as an astrograph, generally employed at Pennant Hills by the Sydney Observatory, has been shifted bodily to Goondiwindi, and there firmly mounted in preparation for the eclipse and for the necessary rehearsals preceding that momentous event.

The party of Canadian astronomers have also come well prepared for observing the eclipse. They will co-operate with the scientists from the Lick University, California, in making observations at Wollal, on Ninety Mile Beach, Western Australia.

The scientific observation of an eclipse, like a pantomime, has to be most carefully rehearsed, for it is a matter of seconds, and each second is more precious than gold where observations are being made of a tremendous event that will not occur again for a great number of years. Working with dummy plates, the whole of the party at Goondiwindi, each man in his allotted place, will be rehearsing strictly according to schedule some days before the eclipse. Unless each man knows his part thoroughly priceless records, from the standpoint of science, are likely to be lost.

COTTON GROWING IN AUSTRALIA

A PROMISING INDUSTRY

SOME INTERESTING FACTS AND FIGURES

The following article appeared in the July issue of "Bank Notes," and is of particular interest at the present moment when the question of of cotton-growing is being so widely discussed. Few people are aware of the immense possibilities which lie ahead of this industry if properly handled, and we feel sure this article will do much towards awakening public interest in the matter.—Ed.

IT is not generally known that good samples of cotton have been produced in other States besides Queensland, which is regarded as being the most favoured part of Australia for producing this tropical growth. A sample has been obtained from the Murray Valley, which, for fineness, length and strength, could challenge the best American Sea Island variety, and would bring 2s. per lb. in Manchester. It is to be hoped that our manufacturers will follow up the wonderful opportunities presented in order that Australian requirements of textile fabrics may be supplied locally. At least one spot ideal for the cotton manufacturing trade is to be found in Cairns, where, within a radius of a dozen miles, is enough water power to supply all the electric energy needed. In addition the climate of that district has the moisture which is apparently necessary for spinning the finest yarns. On the Atherton Tableland alone there is room enough to grow all the cotton needed for Australia, with a small balance for export. Already a cotton knitting mill has been established at Clunes, in Victoria, 140 operatives being employed, and this number it is expected will shortly be doubled. The Australian market alone is a magnificent one, and Australians should set to work earnestly on the job of supplying it themselves.

The cotton industry was started in Queensland about the time of the American Civil War. It did not then attain any proportions, and practically died out in the '80's. About three years ago the British Cotton Growers' Association of Liverpool, England, entered an agreement with the Queensland Government in an endeavour to revive the industry of the British Empire, and a price of 5½d. per lb. was guaranteed to the grower. In the season 1920-21 nearly one million pounds weight of cotton was produced in Queensland, and the results from the various farms were so promising as to open the eyes of the farmers who had again started operations, and resulted in a much larger area being placed under cultivation for the 1921-22 season.

As the season was a most favourable one, the yield has exceeded expectations, no less than five million pounds of cotton being, it is estimated, harvested in Queensland.

In order to assist the industry and to thoroughly enquire into the prospects and possibilities, Mr. Crawford Vaughan, ex-Premier of South Australia, and general manager in Australia for the British Cotton Growers' Association, visited the various districts in Queensland considered suitable for cotton cultivation, and the information he supplied attracted the notice of a good many people, and resulted in a much larger area being placed under cultivation this past season. As a further result of Mr. Vaughan's effort two cotton ginning mills were established in the State, one at Brisbane and the other at Rockhampton. From 1,700 to 2,000 tons of cotton from 65 to 70 centres in Central Queensland will be ginned this season, and, after passing through the various processes, baled and despatched to England,

consigned to the British Cotton Growers' Association, Ltd., Liverpool.

The district which has produced the most cotton in Central Queensland this season is the Dawson Valley, Wowan, Dululu and Rannes ginning very heavy yields.

Cotton seed is available only to growers and prospective growers in the State of Queensland, the supply being in the hands of the Australian Cotton Growing Association, and distributed free of all cost by the association, railway freight being paid, on receipt of an authorized voucher from the Department of Agriculture, where prospective growers should apply. It is understood that the Department of Agriculture in New South Wales has also imported a considerable quantity of seed for local growers, and is making this available on very liberal terms.

About 14,000 acres were placed under cotton in Central Queensland in the 1921-22 season, but not much more than half of this was planted early enough to mature properly. The acreage harvested has produced an average yield of 900 lbs. of cotton to the acre, while the average in America is said to be 500 lbs. of cotton per acre.

In the U.S.A. the cotton plant usually attains a height of about 4ft., while this season in Queensland the plants grew to as high as 7ft., and were consequently hard to pick. They also branched out wider than was expected, and this, too, increased the difficulty of picking.

The seeds are usually planted 15 to 18 inches apart, with 4 feet between each row, and the planting season is September, October, November and December, the plants maturing about March, April and May, and even June.

A Queensland Cotton Field.

Pickers were paid about 2d. per lb., a high rate, but as most of them are inexperienced and the cotton was grown too close together, it was generally found that not many were able to pick over 100 lbs. per day.

The cotton produced this season is said to be equal to the best produced in the world, and it is confidently expected that from 30 to 40 thousand acres will be planted this season, as compared with 14,000 acres last season, in Central Queensland.

Experimental plots are being conducted by the Agricultural Department throughout both Northern and Southern Queensland.

The only market available locally is the Australian Cotton Growers' Association, and all cotton grown in the State must pass through that channel to obtain the guaranteed price or advance of 5½d. per lb.

Nearly all the coastal country of Queensland contains areas suitable for cotton, besides some large tracts of country inland, notably the Dawson Valley, Capella district (Peak Downs). In the latter district the Lands Department reports there is nearly 500,000 acres suitable for cotton-growing in regions close to the existing railway.

The Queensland Premier has announced a scheme for settling 1,500 cotton growers in the Capella district, and preliminary action is being taken by the Government to resume leases with a view to subdividing the land into cotton farms of about 300 acres each. The settlers would not engage solely in cotton growing, but in mixed farming as well.

The Commonwealth Government has approached the Imperial Government on the question of a guaranteed price, and, should this be arranged for, say, a term of three years, it is considered that the industry will be placed on a solid basis. The farmers in all localities in Southern Queensland are experimenting and testing the suitability of their land for the growth and production of cotton, and probably the most prolific up to date is one grown at Boonah, Fassifern district. This crop yielded upwards of one ton per acre.

The yield on an average of 900 lbs. per acre would be a gross return of £20 12s. 6d. per acre, though some growers have averaged as high as £40 per acre, and even higher. Many of the growers last season were quite inexperienced, planting too closely and without proper attention and also without proper cultivation. The cotton plant requires very little rain, and the rainfall in Queensland comes at the right time. When the farmers become experienced it is considered that an average yield (gross) of £20 per acre could be maintained on the price of 5½d. per lb.

Good American cotton land is said to cost about £10 per acre. With our rich and low-priced lands in Queensland there should be no reason why we could not compete with America, and our cotton lands are said to greatly exceed the cotton area in the United States.

Pests have not yet made their appearance in the Queensland cotton farms, and a rigid quarantine has been established to prevent the boll weevil being brought here in American seed.

The Government realises what a big thing the cotton industry means to Queensland, and should be able to arrange to have a guarantee established to place the industry on a firm basis.

A southern firm recently purchased 1,000 acres of cotton land at Archer, near Rockhampton, at about £3 per acre, and is putting the whole area under cotton.

Mr. Crawford Vaughan is advising farmers not to go in exclusively for cotton, but to mix it with other things, such as dairying, etc.

The cotton industry is regarded as the most important development in Central Queensland for many years, and should the industry be successfully developed the present population of 75,000 in 220,000 square miles should double in the next three years.

It is very hard to get thoroughly reliable information in regard to the cost of cultivation and harvesting cotton per acre. Opinions vary very considerably as to whether scrub or forest lands are the most suitable. The advantage of the scrub is the cheapness of producing, as the outlay is the felling of the scrub at about 30s. to 35s. per acre, and with a successful burn the planting commences, the seed being put in with an ordinary maize planter.

The cost of placing an acre under cotton in scrub land and harvesting would work out at:—

	£	s.	d.
Felling and burning, say	2	0	0
Planting	0	3	6
Chipping and thinning	0	4	6
Picking crop of 900 lbs. at 2d. lb.	7	10	0
Bags and bagging	0	4	6
Twine	0	0	6
Cartage	0	5	0
Total	£10	7	6

The seed is planted in the ashes where the scrub is burnt, and, unlike ordinary cultivation and ploughed land, is usually free from weeds.

Forest and ordinary cultivation land would work out at:—

	£	s.	d.
Land clearing	3	0	0
First ploughing	1	0	0
Second ploughing	0	12	6
Twice harrowing	0	5	0
Planting	0	2	6
Horse cultivation (twice)	0	6	0
Chipping and thinning	0	5	0
Picking crop 900 lbs. at 2d. lb.	7	10	0
Bags and bagging	0	4	6
Twine	0	0	6
Cartage	0	5	0
Total	£13	11	0

This is land on which the timber is dead.

The farmers, with few exceptions, will not carry out the whole of the cultivation methods as set out above, and most of them consider the cost of production less than set out. The men who have cultivated on these lines have, however, had the best results, and in unfavourable seasons are much more certain to obtain a crop .

It is generally considered that a fair estimate of the nett return would be about £10 per acre, where the farmer does most of the labour, and £7 per acre where he employs labour to do the work for him.

Under present conditions a man doing his own work on the farm (except the picking, when he would have to engage assistance) can make a living on 30 acres, and live well.

Good cotton land can be purchased in Central Queensland from £1 to £3 per acre.

The industry generally is creating a great amount of interest, and there is good enquiry for land suitable for cotton-growing.

ON SYDNEY HARBOUR

The Late VISCOUNT NORTHCLIFFE

A Character Sketch of the Famous Journalist appears on Page 420 of this issue.

If the Eye were a Telescope

We should enter a world of terrifying splendour at sunset

By Latimer J Wilson

IF the human eye should suddenly acquire the power of a telescope, so that people could see everything magnified hundreds of times, what a strange sunset would end the day As the dusk turned into the darkness of night a pale light would flood the cerulescent sky, and the most remarkable of sights would be witnessed. Crowds would gather wherever an open view of the horizon could be obtained. Beyond the sky-line would come a gigantic disc, so strange and mysterious that at first no one would recognize it as the moon.

Stupendous and terrifying, yet majestic in the lights and shadows of the weird scenery, is the moon. If people could see the earth's satellite wtih the naked eye as even a moderate-sized telescope shows it, the strange beauty of Astarte would arouse mankind to its highest pitch of excitement, and every hilltop would swarm with people who had come to witness the moon rise.

Magnified a hundred or more diameters, the moon would fill the sky with its mountain-pinnacles and crater-walls hanging threateningly downward toward the earth. Men would distrust the power of gravity to hold such a mass of heavy material above their heads. The features of the familiar "moon man" would be transformed into arid plains pitted with black holes. Curious serpentine valleys, filled with shadows or brilliantly flashing the fire of sunshine; phantom peaks of mountains protruding from pits of bottomless night; crater-floors marked with fantastic shadows—the eye as a telescope would disclose all these when we looked at the gibbous or the half of the crescent moon

One normally thinks of the rising moon as a disc that is much smaller than a man of average height. But if a man should be seen projected against the disc of the moon when he stands a mile from the observer, he would appear only about one-tenth of the diameter of the lunar disc, and he would be scarcely visible to the naked eye—unless it possessed the power of a telescope. If he stood closer he would be proportionately larger, and if he were farther away he would be vastly smaller, in proportion to the huge hemisphere of the earth's satellite. To see the wonders of the heavens and to include the familiar features of the landscape, the observer would have to occupy a position that commanded a perfectly clear view. Otherwise nearby objects would intrude their magnified size upon the scene.

Having witnessed the moon rise and pass serenely across the heavens, the crowds would now behold a spectacle more fantastic than imagination has ever conceived. Everyone could now see the splendour of Saturn, the ring-bound planet which before had been visible merely as a point of light shining steadily among the twinkling stars. This most beautiful of worlds comes into the sky in all the majesty of glittering moons and rings, scintillant in the light of the far-away sun. Says Omar:—

From Earth's centre through the Seventh Gate
I rose, and on the Throne of Saturn sate.

Yet the author of the "Rubáiyát" never saw the ring of Saturn as the telescope reveals it.

It Vanishes as You Draw Near.

At a distance of nearly eight hundred million miles from the earth, the planet is a conspicuous object softly shining in the darkness of the night. But if one could approach close enough Saturn would almost vanish, because its surface—so greatly

magnified and spread over so great an area of the sky—would be far less bright to one's eyes than when seen with its light concentrated upon a smaller area.

Saturn's ring is composed of small isolated bodies, each separately too insignificant to be individually seen from the earth. Meteoric dust-clouds, they circle swiftly around the equatorial girth of the planet. The bodies are evidently more scattered in that portion of the ring closest to the ball of Saturn, and also in the outer rim of the ring, while a broad black gap occurs within the ring itself in which there are no visible reflecting bodies.

If one could approach very close to the great racecourse of the ring, the little masses circling around it would be seen as mere dots of light, and the effect of the beautiful ring would utterly be spoiled. There are evidently vast clouds of tenuous dust, scarcely as dense as the haze of spring, which sweep back and forth across the rings as the forces of gravity and light-pressure operate. The moons of Saturn cause "tides" in the ring-particles and dust-clouds, producing what might be called gravitational waves, grinding together the denser masses and passing in undulating motion throughout the plane of the ring.

Stars that Swarm by Thousands.

In certain parts of the heavens can be seen on a dark, clear night, a mere hazy patch of luminosity, too faint to attract attention. If the eye were a telescope a marvellous transformation would occur when the observer glanced at one of these spots. Instead of the insignificant wisp of light, scarcely visible, would be seen a magnificent globular cluster of stars

Hidden in the vast distance of space, these curious balls of suns are to be found. Literally thousands of stars are congregated in these mysterious swarms, and many of the individual members are variable in their light. They become alternately bright or faint in the course of only a few hours, flashing like lazy fireflies in a summer night. If the eye possessed the power to disclose these amazingly beautiful objects, and people could see them associated with the landscape near the horizon, men would crowd every hill to witness the scene. A count of the exceedingly faint members of the sun-swarm might raise the total number in some of these clusters to fifty thousand stars, the brightest streaming from the centre in curious spiral arms. It is estimated that the light of one of these clusters is at least thirty-seven thousand years, travelling one hundred and eighty-six thousand miles a second, on its way earthward.

Like Rockets Bursting in Air.

Magnified a hundred or more times, the globular cluster becomes a truly impressive spectacle. Associated with the familiar landmarks on the distant horizon, and magnified many times, the great star-ball, which actually occupies an area in the sky scarcely one-sixteenth of the apparent space occupied by the full moon, would drop below the horizon like the myriad sparks from a huge bursting rocket, astounding the spectators by its magnificence. "Can that mere speck of wispy light be that which I now behold?" would ask the spectator, comparing this telescopic object with its normal naked-eye view.

Turning toward another point of the horizon, a ball of light, a bright disc three or five times larger than the normal apparent size of the familiar fair lunar orb, could be seen. Shining like a star of dazzling beauty would be a curious white spot attached to the edge of the disc. It is the distinguishing feature of the most-talked-of planet, the earth's older neighbour in space, Mars. The white spot marks the polar snow of the planet.

With the passage of time men would become so accustomed to what the telescopic power of their vision disclosed that they would no doubt cease to marvel at what they saw. The magnificent grandeur of the universe would become commonplace, but there would remain a wide and undiminished interest in the ever-changing phenomena of Mars. The snow-caps, melting in the sunshine of the Martian summer, or forming in whiteness during the winter, would ever attract attention. The delicate tints flashing like an opal in the sunlight, the sweep of seasons showing across the vast gap of millions of miles, would always maks Mars a subject for newspaper publicity.

Enjoying the Martian Scenery.

If, without a telescope, observers could look at Mars and see its yellow deserts, its areas of blue-green forests and fields, its drifting clouds, and its regions of frost, if they could watch the strange shapes of the planet's markings as rotation brings them across the disc, the spectators would find such fascination in the views that people would speculate upon how to discover a means of finding out what manner of life prevailed there. The growth and decay of the remarkable streaks called "canals," thought to be projects of engineering skill producing an abundance of vegetation by irrigating the desert regions of Mars, would be a fertile subject for newspaper controversy.

Bridges of Flame at Sunset.

How strange would be the sunset The enlarged sun, extended over a greater portion of the sky, would be less bright, area for area, than when concentrated in a smaller disc. But one would still have to use a shade-glass to look directly at it. Sun-spots, which are sometimes visible to the unaided eye, now could be seen as great, fantastic shapes of darkness strung across the sun's bright disc.

Legend gives the buffalo's eye the power of magnification. But if the human eye took on the power of even a small telescope, to include landmarks such as the Tower Bridge in the field of view, the observer would have to stand many miles away. Othewise the bridge itself would eclipse the setting sun.

Man would view the sun, the moon, the star-clusters and the planets magnified one hundred, four hundred, or one thousand times their naked-eye size. A new heaven and a new earth would be created for human sight.

IN SOBER VEIN

What everybody needs most is encouragement. Carping critics and gloomy pessimists never helped anyone to a better life. There is in the world to-day too much insistence on petty faults and small failings, and too much neglect of the big things. Destructive criticism is the vice of petty minds. To see the good in another and praise it is just as easy as to search for faults and condemn them. The microscope reveals the tiny things in nature; the telescope shows the stras.

A QUESTION OF COLOUR.

Whenever you are feeling blue,
And say that joy soon passes,
I'll tell you what you'd better do
Whenever you are feeling blue
And think that life is hard for you—
Put on rose-coloured glasses,
Whenever you are feeling blue,
And say that joy soon passes.

Then in a flash you will behold
Unnoticed, varied treasures,
Like those in fairy tales of old;
Then in a flash you will behold
The silver rain, the sunshine's gold,
A host of other pleasures,
Then in a flash you will behold
Unnoticed, varied treasures.

What is developed is not really changed, but made more fully itself; and by giving to woman a truer education the beauty and charm of her nature will be brought more effectively into play.

* * *

When you are talking with other people, even in the strictest confidence, always keep this in mind: "Am I revealing business or family secrets or private affairs which I may regret some day."

* * *

Let not your mistakes and false steps embarrass you. Nothing is so valuable in experience as the consciousness of one's errors. This is one of the cardinal means of self-education.

* * *

Maintain dignity without appearance of pride; manner is something with everybody, and everything with some.

* * *

To digest knowledge one must have swallowed it with an appetite.—A. France.

* * *

Has it never occurred to us when surrounded by sorrows that they may be sent to us only for our instruction, as we darken the eyes of bards when we wish to teach them to sing.—Jean Paul Richter.

Block, courtesy "Bank Notes."
Alexandra Avenue, Melbourne—the "Rotten Row" of the Southern Capital.

THE WOMAN'S CORNER

SPRINGTIME.

"SEE where she comes, apparelled like the Spring!"

Paris has produced a wool moracain. Also a cotton fabric that has the appearance of stockinette, which is to be devoted to sports frocks. Another fabric is silk zenana, in pastel shades, and poplin, which we have been using for covering our furniture, is coming into its own again. Dimities and old-fashioned printed calicoes and ginghams will be used for morning wear, and in every case will be furnished with frills or collars and cuffs of hand-drawn voile or goffered muslin or embroidered organdie. Guipure lace is coming back in ivory and ecru shades, and fringed collars and white pique vests will be seen. The Puritan style is favoured for sponge cloth frocks, and the return of the fichu is predicted, made more in the form of a cape than with the fulness of old. Suede and velour cloth are to be used for collars, some with pinked edges, some bound, and many of them punched with designs, these being suitable for coat frocks or the coats of suits. The lingerie collar, so becoming to all faces, will be universal, and cuffs to match will be sold in sets. We shall trim our hats with oats, grasses of all kinds and colours, marguerites, apples, grapes and berry trails; Dutch tulips and sea shells will make a difference to the conventional roses and poppies, and silk hops will supersede the commonplace cornflower. Tagel, tuscan, pedal and crinoline straws promise to be the most popular. If you have a Paisley shawl that is too worn to be used as a cape cut out the best part of it, embroider it with metal thread, either gold or silver, and twist it round your hat crown. The latest in jumpers is a waistcoat effect, made to fasten; some are open right down, and slip on like a coat. A pretty model with the long-waisted line is made with the back and sleeves of cream *crêpe de chine,* with the waistcoat, collar and cuffs of striped material, the waistcoat crossing in front and fastening with a single button. Another has side pockets concealed in an upturned hem. Still another has a fringed collar and fringe bordering the short sleeves. Contrasting colours in which these jumpers may be effectively carried out are peach and cyclamen, cinnamon and copper, mauve and grey, lemon and putty, and apricot and mole. Beaded voile is being launched on the market, the flowered varieties being ornamented with an all-over design in squares and circles. It is a British manufacture, and is also carried out in cheaper material, when the effect of beads is gained by the use of outline designs made up of tiny white spots, having the appearance of beads.

WOMAN PERFORMS MARRIAGE SERVICE.

The first wedding service performed by a woman took place at Maida Vale, in London, in July. The Rev. Constance Mary Coltman, the wife of a Congregational minister (she married him the day she was ordained, and went to work with him in the East End), was given full powers to perform the ceremony by the Congregational Union, which acknowledged that she possessed the same power as women registrars. It was an all-woman service—woman minister, woman organist, and women choir. Mrs. Coltman has al-

ways been in demand for christenings, but this is her first wedding. The word "obey" was omitted by the bride, and both bride and bridegroom gave each other rings.

THE JOY BRINGERS.

Rawson Chambers, Rawson Place, is the depot for clothes, toys and groceries for the poor, under the scheme of "Joy-bringing" lately instituted by Dr. Arthur and Nurse Hughes. It is to be lamented that a great many people's charity is only touched when they have no further use for their clothes and it comes to a toss-up between the needy and the dustbin. Many of the garments left at Rawson Chambers have had to be burned right away. Surely, as a nation of people credited with large hearts, we can do better than that Shall we wait for the moth and rust that corrupt our treasures or "lay up for yourself treasure in heaven, where thieves do not break through and steal?"

HINTS ON HATS.

A woman with brown eyes should never wear a white hat. It flattens the soulful promise of her fathomless eyes. A pale woman should shun black hats unless the colour she lacks is dexterously introduced beneath the brim. Dark blue, grey and mole require careful discrimination. Now that the skyline of a woman's face ends at the eyebrows, a dark blue ridge cutting off the forehead creates an impression of severity that few women, did they realise it, would desire. Brown needs caution, for the skin must be clear to stand the contact, and, while some brunettes may wear it to advantage, the complexion for the brown hat should be of the clear olive variety. Women no longer young should avoid the jaunty leghorn that will be prevalent this spring, and the "yellow jaundice" straws. The wrong hat betrays the years quicker than any other article of apparel; a woman with pleats in her face will do well to close her eyes resolutely to the attractions of the hats intended for the flapper. All bobbles and bell-pulls and trailing ribbons ought to be anathema, except they are of the freshest. This season, through the graciousness of the High Priests of Parisian fashions, we are to be allowed to wear the greatest gift they have ever given to the modern Eve—the picture hat. It will be reproduced in crinoline, *crêpe de chine,* and georgette, and in most cases it will be transparent. Bronze georgette trimmed with coq feathers is one amazingly attractive model recently shown in Sydney. Organdie hats to match frocks of the same colour, or trimmed with flowers, also made of organdie, to harmonize, will be the general wear. A quaint mixture is crinoline and strips of fine felt in contrasting colours. Kingfisher blue is one of the most popular shades for the coming summer; dawn yellow and salmon will be much worn, while black and white will hold their own as usual. Last English mail conveyed the news that all the smartest people in London were wearing black and white.

ANGELS OF THE PRAIRIE.

Two Canadian nurses, who gave five years' service at the war, have solved the problem of carrying on the good work of serving their country on a large scale. Dreading the return to the dull routine of taking temperatures and soothing neurotics, when they were demobilized they went out to the Far West in search of big adventure. Many of the men whom they had nursed in France were already back and settled on new homesteads with new brides. Many babies must be born on the prairie, and these nurses, Mary Ellis Conlin and Genevieve de Turberfille, had heard many a tale in the military hospital of "the little shack with a bed in one corner, an upturned box for a washstand; another box mounted on four sticks for a table, and a muskrat rug for a carpet. The nearest doctor a hundred miles away." These were their "boys," and they wanted to keep in touch with them. They persuaded the Minister for Health of Alberta to let them start in a humble way as district nurses. They set up in a disused shack with first-aid kit, bandages and antiseptic thread for their patients, and for themselves overstockings, slickers, foot warmers, rubber boots, cold cream, and serviceable uniforms. That winter influenza came to the North, and a nurse in a muskrat cap with her bag in hand was a welcome sight in the snow-covered shacks of the prairie. These two

brave women walked miles, relieving pain and keeping down fever. A note on the door of their shack told their whereabouts as call after call was made upon them. The scheme has grown, and there are now five district nurses, provided with broncho ponies, and living some miles apart.

TO KEEP MEN IN THEIR PLACE.

Elinor Glyn, in a current American magazine, gives her advice "how to keep men in their place." "But," she adds engagingly, "the place of a man in the eyes of a woman is where she personally wants him to be. If he has fascination every woman will want to be kind to him; if he has a strong character he will be adored, and women won't snub or make a slave of him." The erotic Elinor classifies women into three basic types—the lover-woman, the mother-woman and the neutre-woman. She declares that the lover-woman is the most lenient to man's faults, and gives him the most pleasure, so that, consequently, she has the best time in life. The mother-woman, being more attached to her children than her husband, whom she inclines to call "daddy" or "father," does not get the same devotion from him. The neutre-woman is the type who claims to be man's equal, but likes to think of him as a little beneath her in brains and moral worth. She is neglected by the men whom she despises. Elinor seems to have worked it all out on a basis of fifty-fifty.

HOW TO GET THIN.

This recipe is so simple that few people can be persuaded to take it seriously; yet, systematically carried out, it has never been known to fail. Results to the extent of a reduction of four pounds in a week have sometimes been achieved, but in most cases the process is slower, though just as sure. If, on the other hand, the person who wishes to lose weight finds that her courage is weakening on Wednesday, or that "we must make an exception of Sunday," she may as well give it up before she begins, because the routine will be only so much waste of time and useless self-denial. The secret is simply not to eat and drink at the same time, to take two large tumblers of water—hot or cold, according to preference—one hour before

(Photo. Ashby Studios.) *(Copyright.)*
Mis EVE GRAY.

Australia's Most Beautiful Girl

WINNER OF THE "EVENING NEWS" BEAUTY CONTEST.

FOR the benefit of the many women who are desirous of knowing the best methods for retaining or regaining their beauty and facial charm, the following article by Australia's most famous Beauty Actress is given below:—

"To the few women who have been endowed by nature with perfection in facial contour, skin, colouring, hair, etc., are many thousands who just miss being really beautiful by some defect which, by proper treatment and care, could be remedied. Two of the most common defects occur in the skin and hair: the skin being rough and grained with foreign matter, such as the excessive use of powder, and the hair dull and lifeless through carelessness in shampooing. For the removal of the defective skin, Mercolized Wax should be used, as this preparation has peculiar properties not possessed by other face creams, in that it absorbs in a painless and harmless manner the dried-up surface skin and allows the fresh young skin underneath to appear.

For the dull, lifeless hair: The best treatment is a thorough brushing regularly every day. The brushing should be continued for several minutes, according to the length and strength of the hair, and should be preferably done in the sun. The choice of a good shampoo is important, and Stallax granules are especially suitable, as, in addition to thoroughly cleansing the scalp, they impart that fluffiness which softens facial outlines.

Eve Gray

each meal, and to cut out soup (being a liquid), porridge, potatoes and a surplus of pastry and bread. Morning, mid-morning and afternoon tea may be taken, but without food. Three months will show a marked difference in weight. There is nothing injurious in this recipe, and one feels remarkably well during the process.

"ONLY THE WORKERS WIN."

Sir William Beach Thomas, who is touring Australia just now taking notes on the wisdom of immigration from England to the south, has made some pertinent remarks on why immigrants fail. He says: "You cannot make a livelihood by playing the gentleman. Only the workers win." He tells a story of a woman he met in Canada, who had migrated from England twelve years before and made a success of farming in the province of Vancouver. Close to her farm was another, owned by a retired officer, who complained that he could not make it pay. He drives his *Rolls-Royce* into the market with a dozen eggs," she said, "carries forty cents back to his palace, and in the evening, after his game of tennis, writes to the British papers to say that farming does not pay in Canada." In Victoria, B.C., Sir Thomas met a land girl, called a "farmerette," who was able to earn £7 a week and most of her board and lodging . She was famous in the district for her three pets, a cob, a dog and a parrot, and the neighbours pointed her out as a woman who had "made good."

THE OPAL.

There is a beautiful, tender little fairy-tale about the Sunbeam falling in love at first sight with the Moonbeam. He was ardent and eager—she was chaste and shy, but he followed her everywhere, wooed her with the hot-headed passion of youth, until he wore away the shyness of the dear little Moonbeam, and love's sweet young dream came true.

And the result of the mating of the Sunbeam and the Moonbeam was the birth of the Opal.

The opal is the most beautiful, wonderful and mysterious of all gems. It contains all the colours of the rainbow, which flash and glow and sparkle, emitting minute flames as the light plays over the surface.

In the fourteenth century the opal was known as the "opthalmius," or eye stone, because it was believed to sharpen and strengthen the eyesight.

In India the passing of an opal across the brow is believed to clear the brain and strengthen the memory.

In the East it is regarded as a sacred stone, which contains the Spirit of Truth, and in Ancient Greece the opal was supposed to possess the power of giving foresight and the light of prophecy to its owner, provided it was not used for selfish ends.

Misuse of the opal meant ill-luck in love for the owner and disappointment and misfortune in all enterprises. The opal, being a Libra gem, and essentially a pledge of friendship, is not lucky for anyone having Venus afflicted in their horoscope. Although the opal has been considered by some an unlucky stone, black opals are exceptionally lucky.

About the year 1900 a number of deposits of natural black opals were found in the White Cliff region of N.S.W., where exceedingly beautiful gems have been secured with wonderful flames of green, red and blue in a black background.

The idea of the opal being an unlucky stone arose, doubtless, from the careless reading of Sir Walter Scott's novel "Anne of Geierstein." Had it been any other stone Hermione would still have undergone the same adventures.

A possible explanation of the superstitious dread of the opal may be found in the fact that lapidaries and gem setters to whom opals were entrusted were sometimes so unfortunate as to fracture them in process of cutting or setting. This frequently was due to no fault of their own, but to the natural brittleness of the opal. As these workers were responsible to owners for injury to gems they would soon acquire a prejudice against opals, and would come to regard them as unlucky stones.

Very widespread superstitions often have no better foundations than this, and the original cause, sometimes quite logical, is soon lost sight of, and popular imagination suggests something entirely dif-

ferent, which appeals better to the imagination.

A DAINTY BOUDOIR IN CORN YELLOW.

The psychological effect of colour on the personality is widely known. The surroundings, the environment of a woman, play a great part in the formation of her character.

Yellow is the natural emblematical colour of the sun; it is symbolic of light and warmth, it is gay, lustrous and enlivening.

Perhaps, for lack of euphony, it appears often under guise of golden, saffron, tawny, orient, citrine.

A boudoir in the paler shades of lemon, relieved with saffron and golden tints, would be bright and cheerful.

The floor of birch finished in natural colour should be waxed, and about three rugs in golden brown either of linen or wilton placed on it.

A fine satin stripe paper in two tones of soft yellow would look pretty on the walls, and the ceiling paper plain and a little lighter, will give the effect of sunshine in the room.

The woodwork should be enamelled with a satin finish, the same tint as the ceiling, and nosegays of coloured flowers painted or stencilled on.

For the windows (a most important consideration) I should have cream marquisette casement curtains, and over these curtains of cretonne, showing yellow flowers, with touches of apple green and turquoise blue.

Be very careful to avoid the mistake of using too much cretonne—this spoils the artistic effect, and makes it gauche and crude. Introduce a little plain yellow by covering one of the cushions of the cretonne-covered couch, also, perhaps, the easy chair. Where possible a pale blue (Alice blue is pretty) should be insinuated, as this is the proper contrasting note for yellow, and will prevent monotony.

Let the lighting fixtures be of ivory enamel, and include at least two dainty bedroom lamps fitted with exquisite shades in palest lemon and turquoise blue.

Encased in such a setting a girl's life would be:

"Yellow, mellow, ripened days,
Sheltered in a golden coating."

—WILL CARLETON.

THE LANGUAGE OF COLOUR.

Green:

Green is the colour of springtime. It signifies Youth, Health and Vigour. It expresses Hope and Victory, and the Olve Branch is symbolical of Peace and Victory. Green is indicative of cheerfulness, Plenty, Life and Immortality, and through its association with the spring of life is used as the Symbol of Inexperience.

"My salad days,
When I was green in judgment—cold in blood.

—Shakespeare.

Green, as the colour of spring, is the emblem of Hope. Verdure indicates life; hence green is the emblem of Immortality.

The Irish are peculiarly addicted to the use of green as a colour, and it is interesting to note in passing how a colour may be woven into the traditions of a people and cherished in the extreme, chiefly due to the continued association.

Blue:

The quality or attribute most striking in blue is Coldness, from which it is characterized as dignified and soothing. The shadowy nature of natural blue gives the impression of sedateness and melancholy, and from being the colour of the clear sky it is associated with Heaven, Hope, Constancy, Fidelity, Serenity, Generosity, Intelligence and Truth.

The expression "true blue" for constancy and fidelity is commonly used, and originated without doubt with mariners, who associated the blue sky with freedom from storms.

The association of blue with the heavens doubtless has been responsible for the symbolic use of this colour for divine love and supreme intelligence. In similar manner, combined with the belief that "the eye is the window of the soul," blue eyes have been symbolic of intelligence. This colour also has been associated with the learned and pedantic, as well as the aristocratic, as "blue-blooded."

"Some ladies were very blue and well informed.

—Thackeray.

A VISIT TO THE RUINS OF BAALBEK

IMPRESSIONS FORMED DURING A MOTOR TRIP IN ASIA MINOR

THE visitor to Syria and Palestine finds himself surrounded by traces of many different civilizations. Hittite, Phoenician, Assyrian, Persian, Greek, Roman, Saracen, Crusader and Turk—from 2000 years before the Christian era up to the present day—each has controlled this country, conquering his predecessor, establishing his rule, and succumbing to the next invader. Each has left his mark upon the land, and on every side stand mute testimonials of former grandeur.

Each city has its special fascination, and each part of the country its special charm, with the result that every traveller unconsciously chooses for himself a particular locality, the study of which holds a greater interest than that of any of the other places visited. The writer is no exception. From amid the maze of mental pictures formed during a protracted journey through Syria and the Holy Land, one remains fixed in his mind with remarkable clarity. This was a visit to the City of Baalbek, now an unknown town of about 2000 inhabitants, but at one time the famous Heliopolis of the Greeks and Romans, and one of the wealthiest and most beautiful cities in Asia Minor. The evidences of its ancient glory, its ruined temples, its works of art, compared with its present pitiable condition brought to mind more vividly than anything else the resistless ravages of time and the insignificance of man.

We had finally arrived in Beirut, the chief port of that country, which was to mark the end of our journey, for we had already stayed too long, and matters of business were calling us home. Our boat, however, was not due to leave for three days hence, and we at once seized upon the opportunity to visit some of the near-by wonders that we had not as yet seen. Inquiries were made and Baedeckers consulted, and it was decided that we should go to Baalbek, which lies some 50 miles inland, on the road to Damascus, and where, it was said, were the ruins of what was once the finest city in the land.

Transportation by rail in Syria is most uncertain. On the other hand, transportation by the time-honoured method of camel or horse is most uncomfortable. Imagine our delight, therefore, when, through the kind offices of a resident motor car dealer, we were offered the use of a real American motor car such as one is accustomed to see on the streets of New York.

Early in the day we left Beirut, and in the clear morning sunlight whirled rapidly through the outskirts of the city between fruitful orchards and gardens, past pleasant villas, and through the pine gropes toward the less settled interior and the lofty summits of Mount Lebanon. The road was excellent, very smooth, and zigzagging in easy curves that made the ascent remarkably easy. Each turn in the road afforded us a different and enchanting view of the promontory of Beirut, dotted with gleaming white houses, and the broad, blue Mediterranean beyond, until we at last reached the summit, 5,600 feet above the sea.

From here the road descended by a similar winding route to Maksi and on to Zaleh, the largest town in Lebanon, with 16,000 people, and possessing an air of comfort and cleanliness so seldom found in this part of the world. From Zaleh on the road is not quite as good, but the "Oakland" did not seem to mind it, and we bowled merrily along across the broad, fertile valley of Bukaa, through the villages of El Muallaka and Kerak Nuh. Here we caught our first glimpse of ruins, but our guide insisted that they were not worth stopping for, and we continued on our way to Baalbek.

Baalbek lies at the northern extremity of a low range of bleak hills, which appeared bare and desolate in the brilliant sunlight. The road, winding through the valley and skirting the hills, is the main highway through the interior, and as we travelled along we passed trains of camels

On the road to Baalbek. A contrast in the old and new methods of transport.

plodding patiently through the dust with enormous crates, bales and boxes fastened on their backs, and driven by ragged, turbaned drivers, who shuffled along in their bare feet or who rode tiny donkeys. Certainly the contrast between the old and the new methods of travel was most marked, and we settled down more comfortably than ever in the car, and, speeding on, left the camels far behind.

At the outskirts of the city we came upon the famous quarries, from which the mighty blocks of stone for the construction of the temples were taken. One of these gigantic stones still lies there, in the exact spot where it was left by the Phoenician workmen over 4,000 years ago. This particular stone measures sixty-eight feet in length, fourteen feet in height, and fourteen feet in width, and weighs approximately 1,200 tons. Beside it the car looked like a toy, and its passengers like pygmies.

From the quarries one proceeds past the so-called "Dome of Doris," and enters the city itself. To-day it is a small, unimportant town of less than two thousand inhabitants, but on every side stand the remains of a once mighty civilization. Formerly it was the most magnificent of Syrian cities, sparkling with palaces, fountains, beautiful monuments and public buildings. Now it is known only for its ruins.

Baalbek, later called Heliopolis by the Greeks, was originally the chief seat of sun worship. In the centre of the city is the Acropolis, still plainly visible, placed on an eminence, and surrounded by a gigantic wall, the mammoth stones of which belonged to the early Phoenician period of architecture. On this Acropolis three temples were built—the Great Temple of Jupiter, the Circular Temple, and the Temple of the Sun; the latter, with its finely preserved ruins is the most magnificent and the most interesting sight in all Syria. The mighty columns, with their exquisitely covered friezes, the richly decorated portals, the "cella," one hundred feet by seventy, and the massive outer wall, all hold the visitor spellbound, and carry him back many centuries to the days

when these great courts and temples were filled with people.

We lost all track of time. Walking slowly amid the ruins, we gazed in silence at the wonders before us, or in hushed voices called each other's attention to a special carving, or soliloquized upon the changes that had taken place. Suddenly we realized that the sun was setting, and that we must make preparations to spend the night. Returning to the car, we drove a short distance from the village and pitched our camp. Supper was a quiet meal, for the spell of Baalbek was upon us, and although one member of the party attempted to be facetious by calling our camp "Oakland House," the rest of us were in no mood for levity.

After supper I returned to the Temple of the Sun, and, mounting to the outer wall, sat there gazing out across the ruins. Thousands of questions arose in my mind. I looked at the three cyclopean stones in the wall, each over sixty feet in length and thirteen feet in thickness, placed twenty feet above the ground, and wondered how they were ever raised to that position. Then I looked out beyond our camp, and the car standing there, and wondered what the people who built the temple would say about a motor car.

Until late that night I sat there in the warm air under the bright stars and let my thoughts run riot. Then I crept softly to our tent, and, wrapped in my blanket, pondered yet another hour before I finally went to sleep.

Bright and early the following morning, after a hasty breakfast, we started on the return to Beirut. The fresh air, the clear sunlight, and the exhilarating rush of the car soon brought back our good spirits, and shortly after leaving we had shaken off the spell of the night before, and were laughing and joking as of old.

The return trip was without incident. We sped through the broad valley, climbed swiftly up the steep, winding roads to the top of Mount Lebanon, paused a moment to drink in the beautiful panorama spread out beneath us, and then descended toward the sea and the busy city.

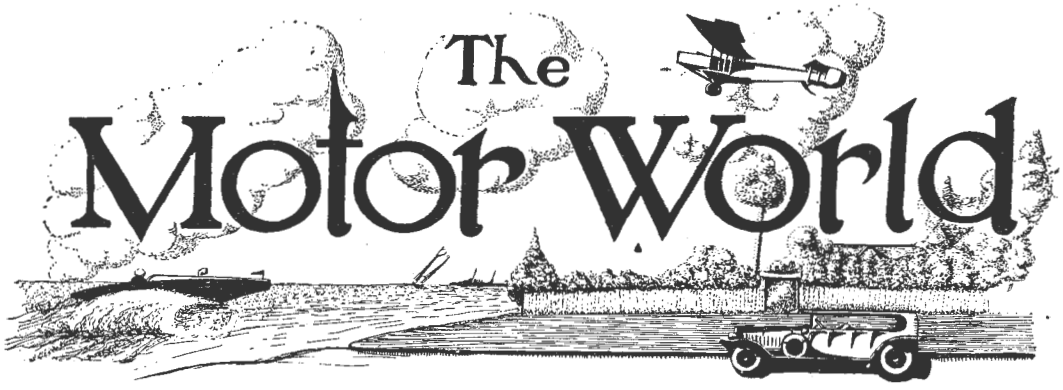
Our last excursion was over, and when we reached the hotel we regretfully bade farewell to our kind host, and prepared to pack for the next day's departure. Perhaps because it was the last place visited, or perhaps because it is such a magnificent monument to the forgotten past, Baalbek stands out in our minds supreme above all the other places in that historical country. It is awe-inspiring, and to the visitor to Syria I can make no better suggestion than that he, too, take the trip to this scene of ancient glory.

A GENIUS AT THE WHEEL

In reliability and record-breaking performances Mr. Boyd Edkins may safely be considered one of the pioneers. As an automobile driver, he enjoys in Australia the reputation of Ralph de Palma, Millton and Chevrolet rolled into one. The car he drives is always the popular one, and that this sporting adoration is not unfounded his numerous victories in Australia bear ample evidence.

He is undoubtedly one of the best drivers in Australia. Starting in 1913, he secured third place with a *Vauxhall* car in the Sydney-Brisbane Reliability Contest. and second in the *Raca* Reliability Touring Contest. Since that time his entries in the various competitions have been a series of firsts and seconds, chiefly the former. Overland records made by Mr. Edkins include Melbourne to Sydney in March, 1916—570 miles in 16 hours 55 minutes; Brisbane to Sydney in December, 1917—650 miles, 26 hours 3 minutes. This record has since been beaten, but it is Mr. Edkins's intention to make a further attempt later in the year, when he will endeavour to place the record where it will stay for some time at least.

To Mr. Edkins driving is second nature. He slips through the densest traffic with an ease and gracefulness which, together with the feeling of absolute safety he imparts to his fellow passengers, makes motoring a pleasure.



By "SPARKING PLUG"

Increasing Importance of Motor Vehicles.

THE ubiquitous motor threatens to revolutionize means of transit in town and country before many years have passed. It is not so long since the ownership of a motor car was looked upon as a laudable ambition to be achieved by the very wealthy—a hall-mark, so to speak, of aristocratic distinction.

The expensive luxury of yesterday is practically a necessary commodity to-day, and it is brought within reach of thousands with only limited means at their disposal.

But when motors commenced making such rapid strides in satisfying the needs of private owners few people in Sydney anticipated such a wonderful mushroom growth of motors catering for public requirements.

The Government has been taken aback, more or less, by the increasing fleet of motor 'buses in Sydney and Newcastle, and is thinking seriously of the effect they are having on the tramway services in both places.

Deputations have already paid visits to Ministers with the object of introducing legislation or taking some administrative action designed to clip the wings of the enterprising 'bus owners, but, up to the present, nothing of a definite character has been decided by the responsible Minister or the State Cabinet.

Motor Commissioners Wanted.

The first step the Government should take, in the interests alike of the travelling public and motor owners, is the appointment of a Board of Commissioners on the same lines as the Railway Commissioners, and consisting of responsible motoring experts who can be relied on to sympathetically administer the department dealing with motoring in all its branches.

At the present time nobody holds a brief for the motoring fraternity when attacks are launched against it at deputations of suburban aldermen or by the railway authorities, who not unnaturally resent the intrusion on their preserves of the past.

Several matters of paramount importance to the motoring world have been the subject matter of ministerial discussion recently, including a motor tax for the maintenance of suburban roadways, right of motor 'buses to display advertisements, and whether 'buses should be compelled to take a different route to that of the trams.

The question of a special tax on motor 'buses and car owners might at first sight seem not unreasonable to the average suburban alderman, who argues that the Tramway Department is compelled to maintain a permanent way for its service, and owners of 'buses should do their bit also. But it must be remembered that many suburban thoroughfares, by the very fact that motor 'buses pass along, have improved in value in much the same way as a new tramway enhances the properties adjacent to its service.

Furthermore, if a special tax is to be imposed on motorists for the maintenance

of roadways, why not a similar tax for other classes of vehicles.

Question of Advertisements.

The Government recently refused to sanction an application by a motor 'bus proprietor to display advertisements on his vehicles the same as the trams. No reasons were given, but nobody expects the Government at any time to explain its want of consistency on any matter. It simply issues a licence to itself to blow hot and cold simultaneously, and no apologies to anybody either.

The action of the Government, however, calls for severe comment, inasmuch as it is a sad reflection on those responsible for the advertisements on tramcars. If the proposed advertisements on the 'buses would shock the aesthetic tastes of pedestrians, by what stretch of imagination does the Government contend that tramway advertisements will not?

The propriety or otherwise of allowing advertisements on trams or 'buses is not in question here—maybe it would be better if the whole of them were prohibited—but whilst Sydney's pedestrians are constantly reminded that "whose this" and "what's this" whisky are the best, according to the tramway authorities, it seems anomalous, to say the least of it, that the Government should hold up its hands with holy horror at the idea of motor 'buses, likewise disseminating the glad tidings.

Good Roads Secretary Disgnsted.

The apathy and general indifference displayed in the Good Roads agitation has been a big disappointment to the Secretary of the Good Roads Association, Mr. Frank B. Smith), who has thrown in the towel in consequence.

In resigning his post as Secretary, Mr. Smith said, *inter alia*:—

"The apathy of the Australian public on the road question is so appalling and astounding that I think it impossbile ever to educate the Australian to the necessity of better roads.

"I have been very keenly interested in this good roads movement ever since its inception. No one has devoted more time and energy to the question of roads than I have, and my interest has been to try to develop the desire of Australians to have their thoroughfares improved.

"In this State to-day we have 91,973 miles of roads, and out of that total only 18,619 are gravelled, metalled, or more highly improved.

"The public ignores the increase in traffic, and it ignores the extra traffic which drifts towards improved roads. Likewise it ignores the hundred and one other advantages to be derived from good roads—so, what's the use?"

Tyre Test from Adelaide to Darwin.

Notwithstanding the rough going, only one set of tyres were used throughout the trip by the party from Adelaide to Darwin and back.

Hardly a decent road was found. The party climbed mountains, ran along stony ridges, through flooded rivers and swamps, high grass which concealed anthills and stumps, continuous miles of sand, and over a boulder-strewn plain, where the rate of progress averaged three miles a day.

Tyres at Cost Price.

Even co-operation, preached as a panacea for all ills, may have a superior. "The Tyre Thrift Club," recently established by Messrs Robinson Bros., of Macquarie Street, Sydney, claims to be that superior.

Its objects are to ensure motor tyre economy, not by any method of making longer the lives of tyres, but by reducing the initial outlay by cuttng the cost. Robinson Bros. have concentrated on buying and selling tyres at under the market price, and from a close study of value and heavy buying powers has evolved the Thrift Club.

Its slogan is: "A guinea a year—tyres at cost," and it is open to all motorists, whether traders or private individuals, as the ultimate object of saving money on the tyre bill appeals to all.

At the disposal of the club are two well-known and highly-reputed business men, and the staff they control. By buying large quantities at spot cash they are entitled to discounts, and this is placed to the credit of the club. The attendant expenses of the co-operative companies are thus eliminated.

From the present membership of the club success appears certain, for it is claimed that the club "simplifies co-operation," as members induce others to join.

A descriptive circular issued by the club sets out the case more fully. One statement in this seems very blunt: "The Tyre Thrift Club carries an ironclad guarantee of a square deal or your money back. Our guarantee is worth as much as your money." The excellent trade references which the promoters show are the backing of their guarantee.

Sydney-Brisbane Test.

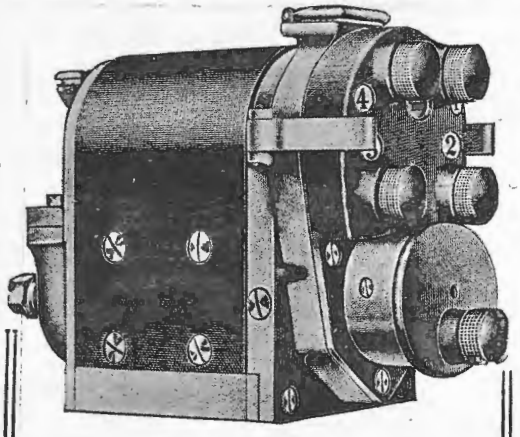
The route for the fourth day of the forthcoming interstate reliability touring contest from Sydney to Brisbane, which starts from Sydney on Monday, September 18, has not been quite settled, and the "coasting" and "petrol consumption" clauses in the conditions have not been finalized, but it has been decided to issue the conditions forthwith, together with the entry forms, leaving the clauses in question to be issued at a later stage in slip form, as little more than five weeks now remain in which to complete the organization of the contest, and the number of entries must be known in order to enable all the necessary arrangements to be made. It is requested, therefore, that members who intend to enter for the contest will not delay in lodging their entries after they receive the entry forms. The Queensland Club has agreed to a compulsory stop of 15 minutes for the purpose of enabling the participants in the contest to witness the eclipse of the sun while the competing cars are in the belt of total eclipse on the fourth day, and the contest will, therefore, provide a splendid opportunity of viewing this unusual phenomenon.

MOTOR CYCLING.

Trial at Christmas.

Keen interest has been aroused by the announcement that the M.C.C. of N.S.W. will promote another trial of this nature between Christmas and the new year.

The council has adopted the suggestion from the committee as to the route, and has gratefully accepted the generous offer



of the firm of Messrs. Biden & Roberts to donate prize money to the value of £75.

The route taps the North Coast as far as Kempsey and the Northern Tablelands as far as Armidale, and then returning via the Northern Road to Scone, striking west to Mudgee, and thence via Lithgow and Katoomba to Sydney, a distance of approximately 1,000 miles. It was the suggestion of Mr. F. Roberts, and is a distinct departure from the route of last year's event. It opens up new ground for the metropolitan riders, will be a distinct change for many country riders, and has the added advantage of touching a number of affiliated club districts.

The route offers a splendid diversity of riding conditions, embracing country of much historic interest and scenic beauty.

Newcastle, Hamilton, Mayfield, North Coast, Quirindi, Muswellbrook, Lithgow, and Parramatta clubs are included, and their united co-operation will influence the result of the undertaking, and render the work of the Hon. General Secretary, Mr. V. R. Blacket, less difficult and onerous.

The conditions are now in the committee stage, and it is anticipated that an announcement will be made at an early date. Motor cyclists who intend entering are advised to make such necessary arrangements early. It is often a difficult matter to get a sidecar passenger at the last moment, as it means an absence of a week at the least.

The Hon. General Secretary anticipates making a survey of the route in company with one of the firm of Messrs. Biden & Roberts with a view to arranging all the necessary details of controls, supplies and accommodation towards the latter part of October.

PERSONALITIES.

Mr. J. A. McKenzie, manager of the United States Rubber Co., returned to Sydney during the month, after a business tour of New Zealand.

Mr. F. C. Blacklock, who has been prominently identified with the activities of the Motor Traders' Association, is returning to Australia, after a tour of the world. He expects to arrive in Sydney about the middle of September.

Mr. R. N. Bubb,
A well-known figure in motoring circles.

Mr. H. W. Harrison, who is on the staff of a Melbourne contemporary, paid a visit to Sydney during the first week in August, and was welcomed by the Motor Traders at luncheon.

Mr. C. Richards, of Bradley Bros., piloted his *Citroen* over two thousand miles of northern district country during last month.

A visit to all the southern capitals—Melbourne, Adelaide and Hobart—was undertaken early in August by Mr. C. G. Poole, representative of the Hupmobile factory.

Mr. C. R. Butt, President of the R.A.C.A. of West Australia, has returned to Perth, after his visit to Sydney, Melbourne and Adelaide.

In a report to his club he mentioned that he was greatly impressed with Sydney's "exclusive" club, boasting over 1,000 members, whilst the Victorian body had carved a name for itself by the live-wire way it had tackled the Alpine Reliability contest.

Mr. D. F. Bauchop, general manager in New Zealand for Leyland Motors, Limited, paid a visit to Sydney during the middle of August.

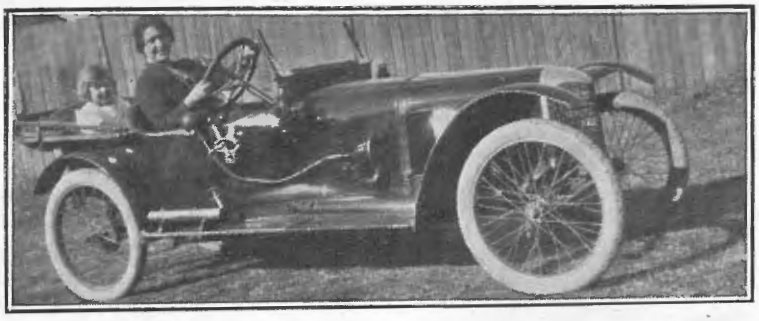
Mr. Dyson Smith, who has undertaken the post of general manager of Sneddon's Automobile Company, was formerly sales manager at I. Phizackerley. The Sneddon Company will handle the agency for *Chalmers,* and will be located in the former Chalmers car showrooms in Elizabeth Street.

Another motor wanderer to return to Sydney after a visit to Great Britain and America is Mr. Charles Jacobs, managing director of John M'Grath, Limited. During his absence from Austraila Mr. Jacobs secured the agency for *Chevrolet* cars, which, he says, have been greatly improved, and are destined to win public favour in the near future.

Mr. Boyd Edkins,
Head of the firm which bears his name.

"HOME-MADE" CAR.

How many people are aware of the excellent results which can be achieved when an enterprising man, possessing the necessary mechanical skill, sets out to build a motor car for himself in his spare time on the back verandah of his own home? Most people imagine that it requires an elaborately fitted workshop and heaps of time, coupled with extraordinary mechanical knowledge to do it, but to a great extent this idea is erroneous. The motor car illustrated herewith is the work of Mr. G.



The motor car built entirely by Mr. G. M. Hungerford, of Croydon.

M. Hungerford, of Murray Street, Croydon, and as a personal inspection of the machine will show it is beautifully finished, serviceable, and complete in every detail. The frame is of ash reinforced with steel, and the design of the car, in addition to the patterns for all the different parts, are the outcome of Mr. Hungerford's own skill and resource. Likewise the lathe, which played such an important part in the construction of the car, is home-made, and, last, but by no means least, the 10-h.p. 8-cylinder air-cooled engine was built entirely by the pardonably-proud owner, Mr. Hungerford. The back verandah of his own home constituted the workshop, and here, in spare time, was initiated and carried forward, step by step, the work which, in its completed form, is a motor car, wherein Mr. Hungerford and his wife and children are able to enjoy many pleasant outings. Mr. Hungerford estimates that the total cost of the raw materials did not exceed £50. The total weight of the car is only slightly over six hundredweight, and the engine, which has four speeds and is so flexible that it will pull strongly on top gear at little more than a walking pace, weights only about sixty pounds. As a sample of its pulling power, it might be mentioned that Mr. Hungerford can negotiate Taverner's Hill quite easily on top gear with two persons in the car. The wheels are wire, 26 x 3, and the car is fitted with two brakes and a self-starter. The petrol tank will hold five gallons of spirit, and Mr. Hungerford estimates that the approximate mileage which he obtains is thirty-five to the gallon. A speed of from 35 to 40 miles per hour is easily attained, and during the many hundreds of miles which he has already covered the owner has experienced an entire absence of mechanical trouble.

As might be expected, the car is an object of interest to all who know its history, and it unquestionably stands as a tribute to Mr. Hungerford's skill and initiative, and a talking advertisement for the future progress of motoring.

MOTOR BUSINESS IN U.S.A.

Good Times Ahead.

An American exchange, commenting on the conditions in the motor field, says:—

"Business has really resumed. Automobile demand proves it in the estimation of the industry, which once more is enjoying the stimulus of contemplating accumulations of unfilled orders for cars. Conditions are still spotty, to be sure, manufacturers in positions of strategic advantage naturally being the first to feel the full effects of the improvement. Such is the rate of gain, however, that the spirit of optimism is once more general, and few are able to resist its infection.

"Detroit, which has been a citadel of gloom for the past eighteen months, is once more overflowing with enthusiasm. The influx of orders during the past few weeks arrived at just about the psychological moment, when inventories had begun to require replenishment to a noteworthy extent. The immediate effect was to produce renewed activity in parts and materials selling course, at the same time stimulating an increase in intracity and inbound shipping. Coupled with an increase in outbound commerce, as factory

operations increased, these influences have produced a perceptible increase in visible activity throughout the city.''

Another proof of renewed motor car sales activity is the fact that oil production is steadily increasing.

In the printed annual report of the General Motors Corporation to its stockholders, issued in the middle of April, belief is expressed that recovery from the depression of 1921 is reasonably assured, and the opinion of General Motors officials is to the effect that 1922 will be a really successful year.

The general upturn of the motor car business has been reflected in the accessory market, which is definitely on the increase. The sale of accessories is nearly always in direct ratio to the sale of motor cars, and the uniform improvement that accessory makers are reporting in their business is equally as encouraging a sign of improvement in motor car sales as are the reports of various car makers themselves.

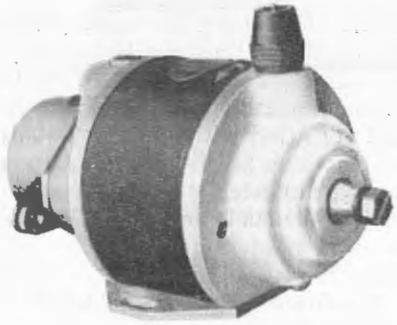
All in all, the motor car industry is looking forward to a year of success in 1922, and is basing its belief not upon air castles of opinion, but upon the proven strength of the spring motor car market and upon the trend upward of business in general.

A NEW DEPARTURE IN "M.L." MAGNETOS.

The new CM and CK type magnetos produced by M.L. Magneto Syndicate, Ltd., of Coventry, England, differ very materially from ordinary magnetos. Both these models are fitted with the new Cobalt steel magnets, which are four times as powerful as the old Tungsten steel magnets, and can, therefore, be made much smaller, with a consequent reduction in weight.

The CM type is an entirely new model, and is suitable for engines up to 350cc. The reduction in weight has been obtained not by paring down useful material, but by the employment of the Cobalt steel magnets, which enable the machine to be made compact and circular in shape; this giving it a clean, smooth exterior without projections, which serve to collect dirt. An entirely new contact breaker is fitted to

this model, and can be run at 3,500 revs. per minute for long periods, and will function perfectly up to 5,000 r.p.m. This machine is particularly suitable for all small high-speed engines, with two or four stroke, and can be supplied for single and twin machines, either rotation.



The CK models are designed to meet the demand for a high-class magneto, capable of giving extremely good low-speed performance. They embody several novel features. The magnet system has been entirely rearranged. The magnets of these machines are also made of the new Cobalt steel, which makes them four times as powerful as the Tungsten steel previously used, and consequently the magnets are much smaller, and can be made straight instead of being bent to the horseshoe shape. These are also manufactured for single and twin machines, both rotations.

Recent successes include wins in the Motor Cycle Senior Tourist Trophy (T.T.) event and Teams Prize in the 3-Litre Motor Car Tourist Trophy Competition, the winning machines in which were ML equipped.

CAMPING IN THE ROCKIES

IN the Rocky Mountains of the United States, and stretching in an almost unbroken chain from the Canadian border to the Mexican boundary line, are the great national parks set aside by the United States Government for the recreation and pleasure of its nature-loving citizens.

These parks range in character from the ice and snow bound Glacier National Park in Northern Montana to the warmly-tinted Grand Canyon Park in Central Arizona.

In practically every one of these parks there is a network of good roads, whose picturesque windings and well-graded slopes delight the heart of the motor tourist.

It has become the popular fashion in the United States to refer to this great series of national parks as "Uncle Sam's Playgrounds." And playgrounds they truly are, for a large proportion of the motor-owning populace of the United States, who each year pack up their belongings and travel by motor to the various national parks, where they spend a good part of the summer camping out.

It is really surprising how much luggage and equipment, in addition to passengers, can be comfortably transported on the present-day motor car. Tents, cooking utensils, folding chairs, cots, blankets and other essentials to camping are carried in addition to clothing, personal items, cameras and thermos bottles, and what not?

The car that has proved to be most suitable for summer vacations in the mountains is that type of machine which is sturdy, economical of petrol, and quite highly powered. The *Oldsmobile "Four"* may be taken as a typical vehicle that has found favour with motorists in the Rocky Mountains on account of the three features just named. A very high proportion of these cars are found in the national parks during the summer time, and they habitually demonstrate their utility for mountain work when it comes to hill climbing—the performance factor in which every car owner takes a great deal of pride.

The traveller through the United States national parks will see many of these cars loaded down to the guards with luggage and camping equipment, and filled with happy and care-free crowds of tourists. If the traveller has been journeying by train and coach in the old-fashioned way a feeling of envy is bound to arise within him, as well as a resolve to imitate the motor-campers the very next summer

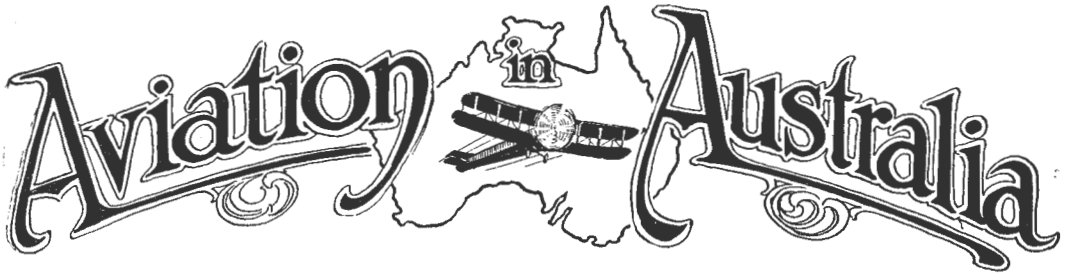
A camp in the Rockies.

The traveller through the national parks will also come across parties of motor-tourists encamped by the side of a running stream or among the trees on some pleasant hill slope, growing day by day more robust, tanned and filled with the joy of living. With a roomy tent or two in which to sleep and eat their meals, and their car packed nearby ready to resume the journey whenever the party wishes to migrate to another locality, the motor tourists are living the "simple life" to the ultimate of their capacity for enjoyment, amidst glorious scenery, the pure air of the open, and healthful surroundings.

Year by year more tourists are making trips to the national parks, and in many instances are spending their entire summer within the boundaries of one or more of these immense playgrounds, laid out for the benefit of the American people.

A Mountain Gorge, Victoria.

Block, courtesy "Bank Notes."



IMPERIAL AIRSHIP SERVICE

SIR KEITH SMITH'S SCHEME

IN the course of a comprehensive survey of the possibilities and advantages of an Imperial airship service, Sir Keith Smith touches on various matters regarding which it is desirable the general public should be better informed than is the case to-day. Much opposition to aerial services arises either from bias or misunderstanding, and this particularly applies to the speed and safety of airship travel, and the influence which the weather conditions exert over this form of transport. On these two points it is interesting to read Sir Keith's observations:—

"During the last twelve months," he writes, "I have carefully examined the daily weather chart, which covers the entire route between England and Egypt, and in my opinion there is no doubt that this first leg of the Imperial air route could be run with a regularity comparable to that of steamships, and in the time I have stated—50 hours. For the next step, Egypt to India, we have not at the moment the same detailed weather information, but there is nothing in the information at my disposal which would suggest any difficulty in maintaining an equal degree of regularity over this second leg of the Empire route. Thus, allowing a stop of half a day in Egypt, India would be reached in 4½ to 5 days, giving a time saving of approximately ten days or 66⅔ per cent. over existing means of transport. A similar saving would also be effected to Australia and other points of the East. Put in another form, the opening of a service to India would give a saving of fully 33⅓ per cent. over the fastest steamship times to Australia.

Beyond India on the Australian route the meteorological data at present available is so incomplete that I do not feel justified in expressing any opinion at the moment as to the degree of regularity that could be maintained, although, from the general weather conditions which are known, there is no doubt that this route could be flown.

Weather Conditions.

"I think it is not generally realized that the airship is perfectly safe in the air as far as weather is concerned, and that on the occasions when modern airships of approved type have been wrecked it was invariably due to accidents happening whilst landing on the ground.

"(*a*) *Electrical Disturbances.* The chief danger in an electrical disturbance is not, as is generally thought, due to lightning, but to the very violent air currents that might bring excessive strains on the hull structure. It is, however, even with the present meteorological organization and with present air knowledge comparatively easy to avoid thunderstorms. I can definitely say that thunderstorms in this country do not constitute a danger to airships, neither will they constitute a danger in the tropics, as with the development of airship routes the meteorological organization will be extended to meet our comparatively simple requirements.

"(*b*) *Snow.* The danger from snow is the possibility of the airship becoming so heavily coated that she will be driven to the ground. Experience gained in the

air and from maintaining an airship at the mooring mast points to the fact that little danger exists from dry snow, as this snow blows off and does not collect on the airship. Damp snow and sleet are the chief dangers. When flying through snow and sleet, however, at the first sign of snow collecting the airship can rise into the dry snow, 1,000 feet in most cases being sufficient.''

V. P. TAYLOR IN MEXICO.

From V. P. Taylor, ''the Australian airman,'' comes the cheery intelligence that he is doing well, and striving as usual to keep his country's name well in the foreground. At time of writing he was in Mexico, but intended returning to the United States at an early date. Australia has few greater ''boosters'' abroad than the genial V. P., and his numerous friends will be pleased to hear that he is doing well.

SURGEON'S AIR TRIP.

A trip by aeroplane to Hamilton and back was made on Saturday by Mr. Carrick Robertson, surgeon, of Auckland, in response to an urgent call to see a patient. The machine was piloted by Mr. G. Bolt, of the New Zealand Flying School.

Kohimarama was left at 10.15 a.m., and the aeroplane alighted at the Ruakura Government farm an hour later. On the return journey a departure was made from Ruakura at 2.40 p.m., and Kohimarama was reached in five minutes over the hour. Everything went very smoothly, very little wind being experienced, and Mr. Robertson described the trip as a splendid one.

MAIL ARRANGEMENTS FOR VISITING SCIENTISTS.

Early this month parties of scientists from overseas will make Wallal, on the north-western coast of Western Australia their rendezvous for several weeks for the purpose of studying the solar eclipse.

A glance at the map of Australia will reveal what an isolated locality Wallal really is, being several days' sail from Perth.

The nearest ports of call of the irregular service of the coastal steamers are Port Hedland and Broome, and Wallal is midway between these two towns. It will be seen, therefore, that the scientists would be at a great disadvantage in respect to the receipt and despatch of mails. At the request, however, of the Government Astronomer, Perth, the Western Australian Airways, Ltd., the company which is maintaining a weekly aerial service between Geraldton and Derby, have arranged to deliver mails by air to the party once per week during their stay there.

Western Australian Aerial Service. Reduction of Fares.

Weekly services are being carried out regularly between Geraldton and Derby, Western Australia, and the operating company, Western Australian Airways, Ltd., has recently announced a reduction in their passenger fares. The new rates are

	£	s.	d.
Geraldton-Carnarvon (270 miles ..	10	10	0
Carnarvon-Onslow (240 miles)	5	5	0
Onslow-Roebourne (165 miles)	5	5	0
Roebourne-Pt. Hedland (100 miles) ..	5	0	0
Pt. Hedland-Broome (310 miles) ..	7	10	0
Broome-Derby (110 miles)	5	5	0
Through Passengers (same trip).			
Derby-Broome-Geraldton (1,195 miles)	28	0	0
Pt. Hedland-Geraldton (775 miles) ..	25	0	0
Special Excursion.			
Broome to Derby (220 miles), return same day	6	6	0

The through journey from Geraldton to Derby by air occupies two and a half days, as against an average of thirteen days by steamer.

AUSTRALIAN AERO CLUB.

N.S.W. SECTION.

The annual report of the N.S.W. Section of the Australian Aero Club discloses a very satisfactory state of affairs, both from a financial and membership point of view. Thanks to the success of the 1922 aerial Derby, of which the report makes special mention, the funds of the Club benefited to the extent of a little over £100 clear profit as a result thereof.

The present membership of the Club is close on 200. During the past year it has maintained close touch with all developments in aviation, and has kept the Civil Aviation Department advised on matters concerning breaches of flying regulations.

It is not difficult to foresee the time when the public will realise the vast amount of valuable work which the A.A.C. has done. Aviation is gradually coming into its own, and the N.S.W. Section of the Australian Aero Club can claim no small share in accomplishing that aim.

New Queensland Line.

THE B.I.S.N. Company has arranged to commence immediately a monthly service from the United Kingdom to Queensland ports, via Brisbane; Cairns will be the final port. Steamers of the *Wodarra* and *Wangaratta* type, probably supplemented by Peninsular and Oriental vessels, for cargo, will be employed, and equal rates of freight for all ports will be charged. All vessels will have ample space for frozen cargo, wool, tallow and all products. The service is guaranteed for twelve months, and will be permanent if importers and shippers support it.

H.M.S. "Psyche" Sold.

The old cruiser *Psyche,* which has been lying for some time at Garden Island, and was offered for sale recently by the naval authorities, has been disposed of. The buyer of the *Psyche* is Mr. Waugh, shipbuilder, of Balmain. The old vessel will be towed to Kerosene Bay, and will be dismantled and broken up. The price realised for the vessel has not been disclosed.

The *Psyche* has been in Australian waters for many years, and for some years was used in the New Zealand squadron. She was a third-class cruiser of 2,575 tons, and having a speed of 17 knots was used extensively among the Pacific Islands.

Sale of Federal Ships.

It was officially announced recently that the five Commonwealth wooden ships have been sold. The vessels have been acquired by Queensland purchasers at the figure of £2,000 for each ship.

Island Cutter Founders.

An exciting incident occurred in Tulagi Harbour, Solomon Group, while the steamer *Mindini* was there.

An inter-island trading cutter, in charge of Captain J. Svensen, and manned by a crew of natives, had loaded a couple of waggons and a quantity of stores from the *Mindini,* and was proceeding under sail to Mamara plantations. Suddenly, during a squall, the vessel capsized and sank. The crew were left struggling in the water. A boat, however, put off and picked up the captain, and the natives managed to swim to the shores.

The vessel foundered in 27 fathoms of water.

Training Ship Officers.

The visit to Australia of the old North German Lloyd training ship *Hersoyen Cecile* has, coupled with evidence disclosed in connection with the disaster to the *Egypt,* interested seafaring men in a proposal that a training brig should be established in Australian waters for turning out

mercantile officers, with a thorough grounding in sail seamanship.

Among those who feel that the *Egypt's* officers' calculations as seamen, in the light of the circumstances revealed, were probably not complete, and that the disaster has a lesson for Australia, is Mr. W. M. Marks, Under Secretary to the Prime Minister's Department, who was a lieutenant-commander during the war.

"The Ancient Mariners' Association has been advocating a mercantile training ship for a long time," remarked Mr. Marks in conversation recently, "and the *Egypt's* collision directs attention to the matter. It also raises the query: What has become of those youths who obtained naval training at Jervis Bay without getting their cadetship? They were taught to love the sailor's life, but they have been lost to the sea."

Rawson Institute for Seamen.

At a meeting held recently at Government House, in connection with the task of extending the work and buildings of that great institution, the Rawson Institute for Seamen, the following office-bearers were elected on the motion of Sir William Vicars:—

Patrons: Sir Walter Davidson and Dame Margaret Davidson; President: The Lieut.-Governor (Sir William Cullen); Vice-Presidents: The Lord Mayor (Ald. W. P. M'Elhone), Sir H. Y. Braddon, Sir S. Hordern, Sir Owen Cox, and Sir Wm. Vicars; General Committee: Messrs. Wm. Brooks, M.L.C., Rodney Dangar, C. E. D. Meares, Geoffrey Fairfax, W. Farmer Whyte, G. A. Parkes, E. D. Simpson, J. Stinson, C. A. Walker, W. T. Willington, Mason Allard, Clifton Love, Gard Trouten, Parke W. Pope, J. Rawlings, G. S. Littlejohn, Elliott Bland, O. C. Beale, J. Maitland Paxton, G. Wesche, Captain Pearce, Captain Waley, Messrs. F. D. M'Master, C. Cuthbertson, F. W. Stoddart, F. Sargood, B. Haigh, K. Cudmore, G. Graham, A. Warry, F. W. Hughes, P. Dive, E. J. Tait, Captain F. Cumming, Sir Ben. J. Fuller, Messrs. M'Kenzie, W. F. Bailey, H. R. Denison, F. W. Hixson, M. A. Noble, and F. Iredale.

New Steamers for North Coast Co.

The North Coast S.N. Co. is bent on bringing its fleet of steamers up to a very high standard in the near future, and has mapped out an extensive shipbuilding programme.

Early in the year the company placed an order in Scotland for a new passenger vessel to replace the steamer *Wollongbar*, which was lost at Byron Bay last year, and it is intended to have a 1,000-ton cargo vessel built in England. It is estimated that the cost of the new *Wollongbar* will exceed £100,000. The construction of the vessel has been delayed considerably by the shipyard strike in Great Britain, but it is expected that she will be launched before the end of the month. She will probably be delivered in Sydney by the middle of next January.

The company also has a new wooden vessel nearing completion at Cape Hawke. She will be named the *Tuncurry*, in place of the former *Tuncurry*, which was lost without loss of life in October, 1916, while engaged in a voyage from Sydney to Brisbane. The new *Tuncurry* is to be brought to Sydney during the next few weeks to have her engines installed.

WIRELESS INSTITUTE OF AUSTRALIA

NEW SOUTH WALES DIVISION

A GENERAL Meeting of the N.S.W. Division of the Wireless Institute of Australia was held at Queen's Chambers, Dalley Street, Sydney, on August 8, at 8 p.m., Mr. H. A. Stowe presiding.

The Chairman expressed his concern at the sudden illness of the Hon. Secretary, Mr. Renshaw, and Mr. Perry, on behalf of members, moved that a letter conveying their sympathy and best wishes for a speedy recovery be sent to Mr. Renshaw and family. The motion was seconded by Mr. Flynn, and supported by Messrs. Gregory and Mingay, and carried unanimously.

The Chairman announced that owing to the indisposition of Mr. R. Hill, the special lecture which he was listed to give would have to be postponed.

The meeting then resolved into a general discussion, in the course of which Mr. Perry announced, in reply to Mr. Mingay, that a referendum of members was being conducted by letter, and on the result thereof depended what action was to be taken by the Council in regard to the Club Room.

Mr. Crocker proposed that a test vote be taken on the motion "That the Institute endeavour to obtain a smaller room at a lower rent, and that a transmitting set be installed with the funds saved as a result, the outcome of the vote not to have any effect on the referendum." The motion was seconded by Mr. Gregory, but was defeated by a few votes.

Mr. Perry then discussed the proceedings of the meeting of delegates of the metropolitan clubs. He mentioned that the meeting had unanimously agreed that the proposed mass meeting of radio experimenters was not desirable at the present time. The main object of the mass meeting was to bring the work of the experimenter more before the public, and the recent organization of several clubs in the suburbs was going to do the work equally as well as a mass meeting.

SOUTH AUSTRALIAN DIVISION

THE monthly general meeting of the South Australian Division was held at the Y.M.C.A. Buildings, Gawler Place, Adelaide, on Wednesday, August 2, Mr. Hambly Clark occupying the chair.

The minutes of the previous meeting were read and confirmed.

A brief outline of the proceedings of the previous council meeting dealing with the amateur status was given by the Chairman, and a report of a conference held at "Collins House," Melbourne, between members of the Victorian Division and the Radio Control Department was read by the Secretary.

The following gentlemen were nominated for office for the coming year:—

President, Mr. Hambly Clark; Vice-Presidents, Messrs. J. M. Honner and H. Hawke; Hon. Treasurer, Mr. R. M. Dunstone; Hon. Secretary, Mr. C. E. Ames; Hon. Assistant Secretary, Mr. F. L. Williamson.

Council: Mr. R. B. Caldwell, Mr. W. J. Bland, Mr. H. L. Austin, Mr. W. H. Harvey, Mr. H. J. Martin.

Librarian: Messrs. R. M. Dunstone and C. E. Ames.

Library Committee, Messrs. C. E. Ames, H. L. Austin, K. J. Martin.

Vigilance Offices, Mr. H. J. Martin.

Examiners, Messrs. V. R. Cook, W. J. Bland and J. M. Honner.

The annual general meeting will be held on Wednesday, September 6, when ballots for election of officers will take place.

Members are reminded that subscriptions are again due.

WIRELESS NOTES

Wireless Concerts.

The first wireless dance ever held in Australia was given at the social evening of the "Swastika" Club in the East Malvern Kiosk, on August 5. Over one hundred people were able to dance to the music, which was sent out from Canterbury. So loud was the music that many asked if it could be reduced in strength.

Besides the four wireless extras a song was rendered by Miss Coles, and one by Mr. Bentley, in addition to a pianoforte solo.

On July 17 a wireless concert was given to the Returned Soldiers' Association (Preston Branch) in their hall at Preston.

The following programme was broadcasted.—

No. 1. *Cherie* .. .. Fox Trot
No. 2. *Moonlight* .. .. Fox Trot
No. 3. Song by Mr. McPherson
On the Road to Mandalay
No. 4. Song by Peter Dawson
Invictus
No. 5. Song by Mr. McPherson
King Charles
No. 6. *In a Boat* .. .. Fox Trot
No. 7. Song by Miss McKinnon
My Life is Love
No. 8. Flute Solo by Mr. B. Flitchett.
No. 9. Song by Peter Dawson.
No. 9 (a) Announcements and General Wireless News.

INTERVAL.

No. 10. Flute Solo by Mr. B. Flitchett.
No. 11. Pianoforte Solo by Miss Cole.
No. 12. Song by Miss McKinnon
Katinka
No. 13 *Mendle's Son* .. .. Fox Trot
No. 14. Pianoforte Solo by Miss Cole
Popular Pieces
No. 15. *My Man* .. .. Fox Trot

GOD SAVE THE KING.

In addition to the Monday evening concerts, which are sent out from 8 to 8.45 p.m., a concert is given every second Friday evening, from 8 to 8.30. The Esperance and Cooktown Radio Stations report that they are receiving the Monday evening concerts clearly.

Lectures.

On July 11 Mr. L. A. Hooke gave a lecture on "High Power Stations" before the Victorian Division of the Wireless Institute of Australia, there being over one hundred present. Mr. Hooke demonstrated his lecture by over 60 slides, and each slide was explained in detail; many technical points, which were new to everyone present, were fully explained.

On August 2 the General Secretary of the Australian Natives' Association, Mr. S. H. Watson, addressed the members of the Prahan Branch by wireless telephone, which was followed by a number of selections played on an Aeolian Vocalion gramophone.

About one hundred and twenty were present. The witty remarks made by Mr. Watson caused great laughter at the receiving end.

Speech by Wireless.

On July 22 the Prime Minister (Mr. Hughes) delivered his speech in the Bendigo Town Hall, and, by means of a portable transmitter, Mr. Hughes's speech was sent out into the ether and was picked up by the radio stations at Melbourne, Adelaide and Brisbane. The report of the Prime Minister's speech was prepared by two reporters, who took turns in dictating from their notes into the transmitter while Mr. Hughes was speaking.

Record Communications.

The following are some recent long-distance communications.—

		Miles.
Perth Radio (3½ k.w. arc), 2,100 metres	S.S. *Sophocles* (1½ k.w. Marconi valve), 2,100 metres	3,790
Perth Radio, spark 600 metres	S.S. *Umsinga*, spark 600 metres	4,293
Adelaide Radio, spark 600 metres	S.S. *Argyllshire*, spark 600 metres	4,547
Esperance Radio,	S.S. *Sophocles*, c.w. 2,100 metres	3,800

Value of Wireless.

Heavy gales and rough seas were experienced in Bass Strait and Southern Ocean during the middle of July, lasting for some days, and several small coastal vessels were considerably delayed in consequence of the bad weather.

Advice received from ships fitted with wireless installations reporting having

sighted the vessels were received, and forwarded to the owners, thus allaying the natural anxiety regarding the safety of the vessels, which were much overdue.

The service thus rendered through the medium of wireless was greatly appreciated by the shipping companies

Staff Changes.

R. Simons, Radio Telegraphist, Townsville, has been transferred to Sydney Radio on completion of his term of tropical service, and has proceeded on recreation leave.

C. F. Dale, Radio Telegraphist, Relieving Staff, Sydney Radio, has been transferrde to Hobart for relief duties.

A. Harrower, Radio Telegraphist, Relieving Staff, has returned to his headquarters (Melbourne) after relieving at Adelaide.

E. J. O'Donnell, Radio Telegraphist, Relieving Staff, Perth Radio, has been transferred to Esperance for relief duties.

Mr. A. Fletcher, Radio Telegraphist, Melbourne Radio, is still in hospital. He has had another relapse, and his condition is very low.

Mr. R. C. Anderson, Radio Telegraphist-in-Charge, Wyndham Radio, joined the happy band of Benedicts on August 1. Our hearty congratulations and best wishes for their future happiness.

Wireless Call Letters.

The following additions and alterations to the list of Australian call letters is notified for July,—

V Z B G ..... Echuca
V Z B Y ..... Eurimbla
V J U ..... Echunga

Reduced rates and agents' frank vouchers will apply to the above vessels.

The following call sign has been cancelled,—

C G O ..... Manurewa

No calls were allotted during the month of June, 1922.

RECORD WIRELESS.

S.S. "Tahiti's" Good Work.

During the last trip of the Union Steamship Company's San Francisco mail liner *Tahiti* some record distances were worked. Transmision was exceedingly good, commercial messages being sent to San Francisco Radio Station as follows:—

On 600 metre wave length: 4,254 miles and 5,200 miles.

On 450 metre wave lengths: 5,430, 4,785 and 4,519 miles.

The above distances, of course, also apply to reception as traffic was "worked," but in addition signals were exchanged with the R.M.S. *Niagara*, of the Canadian-Australian Line, at a distance of 3,800 miles in daylight.

This is another instance of the high working efficiency of wireless apparatus on Australasian ships, which is second to none in the world.

Bob Webster, aged 10, probably the youngest efficient wireless operator in Australia. He lives with his parents at Ariah Park, N.S.W.

A NOVEL DETECTOR.

Last week we had the opportunity of inspecting a very compact little crystal detector, which will be particularly useful to the wireless experimenter for testing out the many different minerals used in this connection. The device (which can almost be put in the waistcoat pocket) consists of a polished ebonite base, on which is a cup-topped terminal to hold the galena, iron pyrites or whatever is being tested. At the other end is a second terminal, carrying an adjustable crossbar, operated by a milled ebonite turnscrew, which permits of instantaneous adjustment, both vertical and horizontal. The device is sold by Electrical Utilities Supply Company, whose advertisement appears in this issue, and they report that practically every experimenter who sees one

buys it on sight—a sure indication of its usefulness.

WIRELESS IN AMERICA.

MR. C. H. BERTIE, Librarian of the Sydney Municipal Library, was greatly impressed by the tremendous progress which is being made in the use of wireless telegraphy and telephony in America. On his recent world tour Mr. Bertie saw in Chicago what was stated to be the first American wireless attachment to a motor car. This enabled the owner, who was starting on a cross-country tour, to keep in touch with the cities all the time. "Radio receiving sets can be purchased," Mr. Bertie said, "for a few dollars, and can be installed by amateurs in their own homes. The hobby has become so popular that the makers of the sets are months behind in the delivery, and popular concerts and other entertainments are regularly 'broadcasted' by the big newspapers, large business houses and the makers of the sets, so that for this moderate outlay a very pleasant entertainment is provided in the home. I listened to a most interesting and amusing bed-time story for children that was being 'broadcasted' all over the United States. Many of the popular preachers of the United States have the wireless installations in their churches, and their sermons are 'broadcasted' to many thousands of listeners in their own homes. The same occurs when the prominent politicians are delivering important speeches."

Radio or Wireless—Which?

In the early days of communication by Hertzian waves the outstanding novelty of the new system lay in the absence of connecting wires between the two communicating stations. Hence, the term "wireless" was coined to describe this form of telegraphy, a term which, though rather crude, still expresses in a popular way the main point of interest.

As the art progressed attenion became focussed more on the extremely high frequencies of the alternating currents used, this being known as "radio frequencies" as opposed to the "low frequencies" of ordinary power practice, such as 25-cycle and 60-cycle systems as used in house lighting and for ordinary electric power. With this in view, the new means of communication became known as "radio telegraphy," or, abbreviated, as "radio."

Navy Radio Works 6,000 Miles.

The navy radio from Cavite, Philippine Islands, to San Francisco, a distance of 6,000 miles, is believed to be the longest in the world. Every day 2,000 words are despatched from the navy super station. Although greater distances have been spanned under favourable conditions, the navy station has been operating regularly, without interruption, for more than a year. The Cavite aerials are supported by three 800-foot towers and the station power is 300 kilowatts.

Colleges to Exchange News.

A wireless news service has been planned by the Harvard Wireless Club. An effort will be made to co-operate other universities in broadcasting intercollegiate news of interest to the students and alumnae. The club is equipped with a set that will transmit 500 miles, and receive any station east of the Mississippi. Schedules of the service and names of those colleges co-operating will be announced later.

Radio Great Boon for Blind.

"The blind man now has the advantage of current news," says Charles E. Comstock, of the State Department of Public Welfare of Illinois. "Radio has made it possible for the sightless person to receive news daily without having it read to him." Mr. Comstock has been blind since infancy.

The work of preparing and installing radio for the blind citizens of the State of Michigan has been undertaken by Lieutenant Leon Seely, of the Michigan Employment Institution for the Blind, at Saginaw.

Radio Compass on Great Lakse.

The first naval radio compass station has been opened at White Fish Bay, Lake Superior, to aid passing vessels in determining their position. The other stations will be opened in a few days at Grand Maraias, sixty miles west of White Fish Bay, and at Detour, near the mouth of St. Mary's River. The particular section where the stations have been installed is known as "The Graveyard of the Great Lakes."

WIRELESS FOR SCHOOLS.

A novel use for wireless was suggested at a meeting of the Southern Hawkes Bay (N.Z.) Farmers' Union. It was that country schools should be equipped with wireless receiving sets, so that weather and market reports could be received, and the pupils could inform their parents. At present, it was stated, market reports often reached the backblock settlements too late to benefit the farmers in the disposal of stock and produce.

A HOME-MADE RECEIVING SET

HOW TO CONSTRUCT ONE

(Reprint of a circular recently issued by the U.S. Bureau of Standards, Washington.)

THIS article describes the construction and operation of a very simple and inexpensive receiving outfit. The outfit will enable anyone to hear radio code messages or music and voice sent out from medium-power transmitting stations within an area about the size of a large city, and from high-power stations within fifty miles, provided the waves used by the sending stations have wave frequencies between 500 and 1,500 kilocycles per second; that is, wave lengths between 600 and 200. The equipment will not receive uninterrupted continuous waves. Occasionally much greater distances can be covered, especially at night. Sets constructed according to the instructions have given clear reception of music transmitted by radio telephone from stations 300 miles distant. The total cost of the outfit can be kept below $10, or, if an especially efficient outfit is desired, the cost may be about $15.

2. Essential Parts of Receiving Station.

The five essential parts of the station are the aerial, lightning switch, ground connections, receiving set, and telephone receiver or "phone." The received signals come into the receiving set through the aerial and ground connection. The signals are converted into an electric current in the receiving set, and the sound is produced in the 'phone. Either one telephone receiver or a pair, worn on the head of the listener, is used.

The lightning switch, when closed, protects the receiving set from damage by lightning. It is used to connect the aerial directly to ground when the receiving station is not in use. When the aerial and the connection to the ground are properly made and the lightning switch is closed, the aerial is not a hazard to a building, and may act somewhat as a lightning rod to supplement the protection given to buildings by lightning rods of standard construction.

The principal part of the station is the "receiving set." In the set described herein it consists of two parts, the "tuning coil" and the "detector," and in more complicated sets still other elements are added.

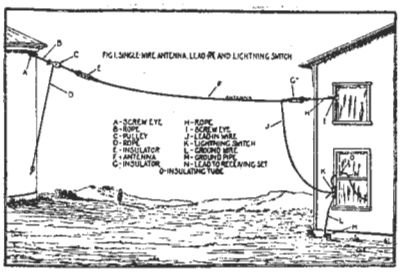
3. The Aerial Lightning Switch and Ground Connection.

The aerial is simply a wire suspended between two elevated points. The aerial should not be less than 30 feet above the ground, and its length should be about 75 feet (see Fig. 1). This indicates a horizontal aerial, but it is not important that the aerial be strictly horizontal. It is, in fact, desirable to have the end where the pulley is used as high as possible. The "lead-in" wire, or drop wire, from the aerial itself should run as directly as possible to the lightning switch. If the position of the adjoining building or trees is such that the distance between them is greater than about 85 feet the aerial can still be held to a 75-foot distance between the insulators by increasing the length of the piece of rope D, to which the far end of the aerial is attached. The rope H tying the aerial insulator to the house should not be lengthened to overcome this difficulty, because by so doing the aerial "lead-in," or drop wire J, would be lengthened.

(a) Details of Parts.

The parts will be mentioned here by reference to the letters appearing in Figs. 1 and 2.

A and I are screw eyes sufficiently strong to anchor the aerial at the ends.



B and H are pieces of rope ¼ or ⅜ inch in diameter, just long enough to allow the aerial to swing clear of the two supports.

D is a piece of ¼ or ⅜ inch rope sufficiently long to make the distance between E and G, about 75 feet.

C is a single-block pulley, which may be used if readily available. The pulley should not allow the rope to catch.

E and G are two insulators, which may be constructed of any dry hardwood of sufficient strength to withstand the strain of the aerial; blocks about ¾ by 1 by 10 inches will serve. The holes should be drilled as shown in Fig. 1, sufficiently far from the ends to give proper strength. If wood is used the insulators should be boiled in paraffin. Precautions in regard to melting the paraffin are given in the paragraph under "Accessories." If porcelain insulators are available they may be substituted for the wood insulators. Porcelain can be used. Regular aerial insulators are available on the market, but the two improvised types men-

tioned will be satisfactory for an amateur receiving aerial.

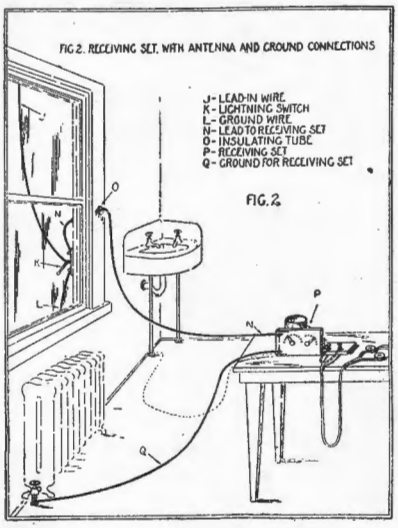
F is the aerial, about 75 feet long between the insulators E and G. The wire may be No. 14 or 16 copper wire, either bare or insulated. The end of the aerial farthest from the receiving set may be secured to the insulator E by any satisfactory method, but care should be taken not to kink the wire. Draw the other end of the aerial wire through the insulator G to a point where the two insulators are separated by about 75 feet, and twist the insulator G so as to form an anchor, as shown in Fig. 1. The remainder of the aerial wire J, which now constitutes the "lead-in" or drop wire, should be just long enough to reach the lightning switch.

K is the lighttning switch. For the purpose of a small aerial this switch may be the ordinary porcelain-base, 30-ampere, single-pole, double-throw battery switch. These switches as ordinarily available have a porcelain base about 1½ by 4 inches. The "lead-in" wire J is attached to this switch at the middle point. The switch blade should always be thrown to the lower clip when the receiving set is not actually being used, and to the upper clip when it is desired to receive signals.

In some stations there is no lightning switch outside the building, but instead a lightning arrester is connected to the aerial "lead-in" just inside the building; that is, as close as possible to the point where the lead-in leaves the porcelain tube. This lightning arrester has two binding posts, one of which is connected to a suitable ground connection. The type of lightning arrester used should be a protective device approved by the Underwriters' Laboratories, Chicago and New York. Information as to the types of devices which are approved may be obtained from the Underwriters' Laboratories, or from local insurance departments. For the ground connection a water pipe or a steam pipe may be used; a gas pipe should not be used. The use of the lightning switch outside the building as above described is perhaps a little preferable to the use of the lightning arrester inside the building.

L is the ground wire for the lightning switch. The ground wire may be a piece of copper wire, No. 14 or larger, and should be of sufficient length to reach from the lower clip of the lightning switch X to the clamp on the ground rod M. The use of a large size of copper wire, such as No. 6, or of copper strap, will give added mechanical strength and minimize the danger of accidental breakage of the ground wire.

M is a piece of iron or rod driven 3 to 6 feet into the ground, preferably where the ground is moist, and extending a sufficient distance above the ground so that the ground clamp may be fastened to it. The pipe should be free from rust or paint. Special care should be taken to see that the pipe is clean and bright where the ground clamp is connected



N is a wire leading from the upper clip of the lightning switch through the porcelain tube O to the receiving set binding post marked "antenna."

O is a porcelain tube of sufficient length to reach through the window casing or wall. This tube should be mounted in the casing or wall so that it slopes down toward the outside of the building. This is done to keep the rain from following the tube through the wall to the interior.

Figure 2 shows the radio receiving set installed in some part of the house.

P is the receiving set which is described in detail below.

N is a wire leading from the aerial (upper) binding post of the receiving set through the porcelain tube to the upper clip of the lightning switch. This wire, as well as the wire shown at Q, should be insulated and preferably flexible. Unbraided lamp cord will serve for these two leads.

Q is a flexible wire leading from the receiving set binding post marked "ground" to a water pipe, heating system, or some other metallic conductor to the ground. If there are no water pipes or radiators in the room in which the receiving set is located the wire should be run out of doors and connected to a special ground below the window. The ground for the lightning switch should not be used for this purpose. It is essential that for the best operation of the receiving set the ground be of the very best type. If the soil near the house is dry it will be necessary to drive one or more pipes or rods sufficiently deep to encounter moist earth. The distance between the pipes will ordinarily not exceed 6 feet. Where clay soil is encountered the distance may be 3 feet; in sandy soil it may be 10 feet. Some other metallic conductor, such as the casing of a drilled well, not far from the window will be a satisfactory ground.

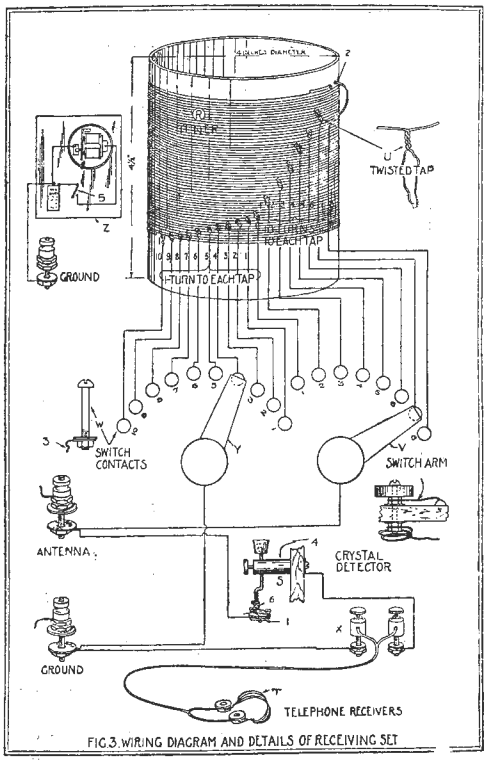


FIG.3.WIRING DIAGRAM AND DETAILS OF RECEIVING SET

4. Tuning Coil, Detector and 'Phone.

The 'phone and certain parts of the apparatus will have to be purchased. The other parts may be obtained at home.

(a) Tuning Coil (R, Fig. 3).—This is a length of cardboard tubing with copper wire wound around it. The cardboard tubing may be an oatmeal box. Its construction is described in detail below. A cylinder of wood or other non-metallic substance may also be used.

(b) Crystal Detector (S, Fig. 3).—The crystal detector may be of very simple construction. A number of different kinds of crystals are suitable for use as detectors. A galena crystal, which will be satisfactory, can usually be conveniently secured. Silicon is usually not as sensitive as galena, but is sometimes more easily obtained, and sensitive spots are often more easily located on silicon. It is important that a selected tested crystal be used.

The crystal detector can be made up of the tested crystal, three wood screws, a short piece of No. 16 copper wire or a nail, a piece of fine copper wire such as No. 28 or 30, a set-screw type binding post, and a wood knob or cork.

The crystal may be held in place on the wood base by three brass wood screws as shown at 1, Fig. 3. A bare copper wire is wrapped tightly around the three brass screws for connection.

A metal called "Wood's Metal," which has so low a melting point that it will melt in boiling water, may be purchased in many stores. If this metal is available it may be used for mounting the crystal, but a metal of higher melting point, such as ordinary solder, should not to be used because it may seriously injure the crystal. A shallow hole of size suitable to hold the crystal and leave most of the crystal projecting may be bored into the hole so that the crystal is held in place. The wire which is to make connection with the crystal should terminate in the hole so that it will be embedded in the Wood's metal. Instead of being mounted in a hole bored in the base, the crystal may be mounted in a small brass cup such as is found on the positive terminal of some kinds of dry batteries.

The binding post may be mounted on the back of the upright panel near its edge, as shown in Fig. 4. It may be found more convenient to mount the binding post on a small vertical piece of wood screwed to the base at another point, so that the detector will be more accessible. A long slender nail, or a piece of copper wire of a size such as No. 16, about 2 inches long, is bent as shown about ½ inch from one end, with an offset depending on the size of the crystal used. Ordinarily the offset may be about ¼ inch. This nail or piece of wire is inserted in the binding post as shown. To the upper end a small cork or wooden knob is attached. To the lower end a short piece of fine copper or brass is attached, and the free part of the wire is wound into a small spiral of several turns. For this fine wire it will be found best to use No. 26, No. 28, or No. 30. For galena the smaller wire such as No. 30 will usually be found best.

(c) 'Phone (T, Fig. 3).—It is desirable to use a pair of telephone receivers connected by a head band, usually called a double telephone headset. The telephone receivers may be any of the standard commercial makes having a resistance of between 2,000 and 3,000 ohms. The double telephone receivers may cost more than all the other parts of the station combined, but single 1,000-ohm telephone receiver with a head it is desirable to get them, especially if it is planned to improve the receiving set later. A band may be used, but with less satisfactory results.

(d) Acessories—Under the heading of accessory equipment may be listed binding posts, switch arms, switch contacts, test buzzer, dry battery, and boards on which to mount the complete apparatus. The binding posts, switch arms and switch contacts may be purchased from dealers who handle such goods, or they may be readily improvised at home. The pieces of wood on which the equipment is mounted may be obtained from a dry packing box and covered with paraffin to keep out moisture. Care should be taken in melting the paraffin not to get it too hot. For this reason it is a good plan to melt it in a pan set in boiling water. When the paraffin just begins to smoke it is at the proper temperature. When the wood parts have been drilled and cut to size they should be soaked in the melted paraffin, or the paraffin may be applied quickly with a small brush. When cold the excess paraffin must be

carefully scraped off with a straight piece of metal such as the brass strip in the edge of a ruler.

5. Details of Construction.

The following is a description of the method of winding the tuning coil and the construction of the wood panels:

(a) Tuning Coil (R, Fig.).—The cardboard tubing is 4 inches in diameter by 4½ inches long. One end of the tube should have the cardboard cover glued securely to it. About 2 ounces of No. 24 (or No. 26) double cotton-covered copper wire is used for winding the coil. Punch three holes in the tube ½ inch from one end as shown at 2 in Fig. 3. Weave the wire through these holes in such a way that the end of the wire will be firmly anchored, leaving about 12 inches of the wire free for connecting. Start with the remainder of the wire to wind the turns in a single layer about the tube, tightly and closely together. After 10 complete turns have been wound on the tube hold these turns tight and take off a tap. This tap is made by twisting a 6-inch loop of the wire together at such a place that it will be slightly staggered from the first connection. This method of taking off taps is shown clearly at U, Fig. 3. Proceed in this manner until 7 twisted taps have been taken off—one at every 10 turns. After these first 70 turns have been wound on the tube take off a 6-inch twisted

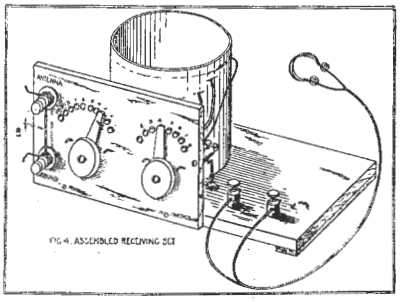


FIG 4. ASSEMBLED RECEIVING SET

tap for every succeeding single turn until 10 additional turns have been wound on the tube. After winding the last turn of wire anchor the end by weaving it through two holes punched in the tube as at the start, leaving about 12 inches of wire free for connecting. It is to be understood that each of the 18 taps is slightly staggered from the one just above, so that the taps will not be punched along one line on the cardboard tube (see Fig. 3). It might be advisable, after winding the tuning coil, to dip the tuner in hot paraffin. This will help to exclude moisture. It is important to have the paraffin heated until it just begins to smoke, as previously explained, so that when the tuner is removed it will have only a very thin coat of paraffin.

(b) Upright Panel and Base.—Having completed the tuning coil, set it aside and construct the upright panel shown in Fig. 4. This panel may be a piece of wood approximately ¼ inch thick, 4½ inches wide, and 8 inches long. This panel can be used with apparatus to be described in another publication. For this reason it is desirable to have the last contact an inch from the right end of the panel (see Fig. 4). It is also desirable to have the contact points near the top of the panel. The position of the several holes for the binding posts, switch arms, and switch contacts may first be laid out and drilled. The antenna and ground binding posts may be ordinary 8/32 brass machine screws about 1½ inches long with three nuts and two washers. The first nut binds the bolt to the panel, the second nut holds one of the short pieces of stiff wire, while the third nut holds the antenna or ground wire, as the case may be. The switch arm with knob shown at V, Fig. 3, may be purchased in the assembled form or it may be constructed from a ⅜-inch slice cut from a broom handle and a bolt of sufficient length equipped with four nuts and two washers, together with a thin strip of brass somewhat as shown. The end of the switch arm should be wide enough so that it will not drop between the contact points, but not so wide that it cannot be set to touch only a single contact. The switch contacts (W, Fig. 3) may be of the regular type furnished for this purpose, or they may be 6-32 brass machine screws with one nut and one washer each; they may even be nails driven through the panel with the individual tap fastened under the head or soldered to the projection of the nail through the panel. The base is of wood approximately ¾ inch thick, 5½ inches wide, and 10½ inches long.

The telephone binding posts should preferably be of the set-screw type as shown at X, Fig. 3.

6. Instructions for Wiring.

After the several parts mentioned have been constructed and (with the exception of the tuning coil) mounted on the wood base, the wires may be connected to the switch arms and binding posts, and the taps may then be connected to the switch contacts. A wire is connected to the back of the left-hand switch-arm bolt (Y, Fig. 3)), twisted into a spiral of one or two turns like a clock spring, and then led back to the binding posts marked "ground." Connection is made to the binding post by removing the insulation from the wire and clamping between the nut and washer. The same wire is now passed through a small hole and run underneath the base to the left-hand binding post marked "phone." A wire is then run from underneath the right-hand binding post marked "phone" to the binding post 4, Fig. 3, which is part of the crystal detector. The copper wire, which was wrapped tightly about the three brass wood screws that hold the crystal in place, is led underneath the base, up through a small hole, and is then connected to the back of the binding post marked "antenna." Another wire is connected to the back of the right-hand switch-arm bolt (V), twisted into a spiral of one or two turns like a clock spring, and then connected to the back of the same binding post.

The taps leading from the tuner should now be connected to the switch contacts. Scrape the cotton insulation from the loop ends of the 16 twisted taps as well as from the ends of the two single wire taps coming from the first and last turns. Fasten the bare ends of these wires to the proper switch contacts as shown by the corresponding numbers in Fig. 3. Be careful to cut or break any of the looped taps. The connecting wires may be fastened to the switch contacts by binding them between the washer and the nut as shown at 3, Fig. 3. After all the wires from the tuner have been connected the tuner should be fastened to the base by two or three small screws passing through the cardboard end. The screws should be provided with washers.

7. Directions for Operating.

After all the parts of this crystal-detector radio receiving set have been constructed and assembled, the first essential operation is to adjust the fine wire so that it rests on a sensitive point on the crystal. This may be accomplished in several ways; one method is to use a buzzer transmitter. Assuming that the most sensitive point on the crystal has been found by the method described in paragraph below, "The Test Buzzer," the rest of the operation is to adjust the radio receiving set to resonance or in tune with the station from which the messages are sent. The tuning of the receiving set is accomplished by adjusting the inductance of the tuner. That is, one or both of the switch arms are rotated until the proper number of turns of wire of the tuner are made a part of the metallic circuit between the antenna and ground, so that together with the capacity of the antenna the receiving circuit is in resonance with the particular transmitting station. It will be remembered that there are 10 turns of wire between adjacent contacts at the 8-point switch and only 1 turn of wire between adjacent contacts of the 10-point switch. The tuning of the receiving set is best accomplished by setting the right-hand switch arm on contact (1) and rotating the left-hand switch arm over all its contacts. If the desired signals are not heard move the right-hand switch arm to contact (2) and again rotate the left-hand switch arm throughout its range. Proceed in this manner until the desired signals are heard.

It will be advantageous to know the wave frequencies (wave lengths) used by the radio transmitting stations in the immediate vicinity. A lower frequency (greater wave length) requires more turns of the coil.

(a) The Test Buzzer (Z, Fig. 3).—As stated, the more sensitive spots on the crystal can be found by using a test buzzer. The test buzzer is used as a miniature local receiving set. This is shown at Z, Fig. 3. The buzzer, dry battery, and switch (5) may be mounted on the table or a separate board. The binding post marked "ground" 'may be one terminal of the dry cell. The current produced by the buzzer will be converted into sound by the telephone receivers and the crystal, the loudness of the sound depending on what part of the crystal is in contact with the fine wire. To find the most sensitive spot connect the binding post marked 'ground" of the receiving set to the test buzzer binding post marked "ground," close the switch (5, Fig. 3), and if necessary adjust the buzzer so that a clear note is emitted; set the right-switch arm on contact point No. 8 and connect the telephone receivers to the binding posts. Loosen the set-screw of the binding post (4) slightly and change the position of the fine wire (6, Fig. 3) to several positions of contact with the crystal until the loudest sound is heard in the 'phones; then slightly tighten the binding post set-screw (4)). The single wire connection between the test buzzer and the receiving set is all that is necessary to give a good test signal when the crystal detector is adjusted to a sensitive spot.

After the construction of the set has been completed a test should be made for broken wires or poor contacts. Connect one terminal of the dry battery to the binding post marked "aerial." Connect the other battery terminal to one terminal of the buzzer, and from the other buzzer terminal run a wire to the binding post marked "ground." Turn the left-hand switch arm to the extreme left and the right-hand switch arm to the extreme right. If the buzzer operates the metallic circuit of the coil is complete.

8. Approximate Cost of Parts.

The following list shows the approximate cost of the parts used in the construction of the receiving station. The total cost will depend largely on the kind of apparatus purchased and on the number of parts constructed at home.

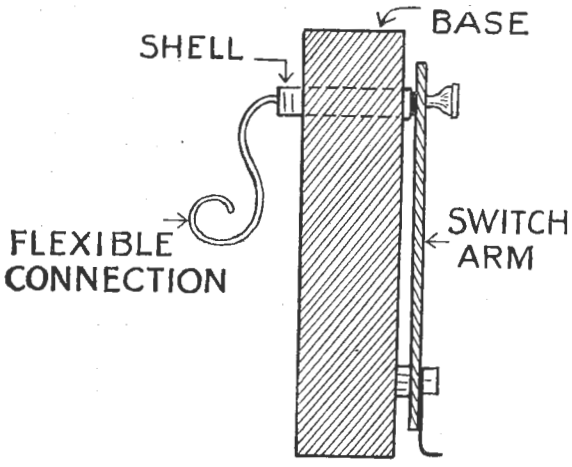
	Aerial:			
	Wire, copper, bare or insulated, No. 14 or 16, 100 to 150 ft.	4	7	
	Rope, ¼ or ⅜ inch, 3d. per foot.			
2	Insulators, porcelain		6	each
1	Pulley		6	
	Lightning switch	7	6	
1	Porcelain tube	1	6	
	Ground Connections:			
	Wire (same kind as aerial wire)			
2	Clamps		3	each
1	Iron pipe or rod	5	0	
	Receiving Set:			
3	Ounces No. 24 copper wire, double cotton-covered ..	2	0	
1	Round cardboard box	2	6	
2	Switch knobs and blades complete	6	0	
18	Switch contacts and nuts ..	3	0	
3	Binding posts, any type	1	6	
1	Crystal (tested)	1	6	
3	Wood screws, brass, ¾-inch long		3	
2	Wood screws for fastening panel to base wood for panels (from packing box)		2	
2	lbs. Paraffin	2	0	
	Lamp cord, 6d. yd.			
	Test buzzer	5	6	
	Dry battery	3	6	
	Telephone receivers	37	6	
	Total	£4	6	4

JUNIOR MECHANICS SECTION

In order to keep this section as bright and up-to-date as possible we seek the co-operation of our readers. By contributing simple constructional and experimental items—written in non-technical language that will occupy space varying from a small paragraph to a full page or more—accompanied by diagrams and illustrations, readers will materially assist. All contributions will receive our most careful consideration and, if accepted, will be paid for on publication.—ED.

MAKING CHEAP CONTACT STUDS.

Contact studs for switches, rheostats, etc., may be made from .33 rifle shells (or other sizes, as desired) by boring a hole the same size as shell in the plate and



pushing in the shell. Connections may be soldered into the shell, the bottom of which makes contact with the switch.

A.C.J.

LEARNING THE MORSE CODE BY FLASHLIGHT.

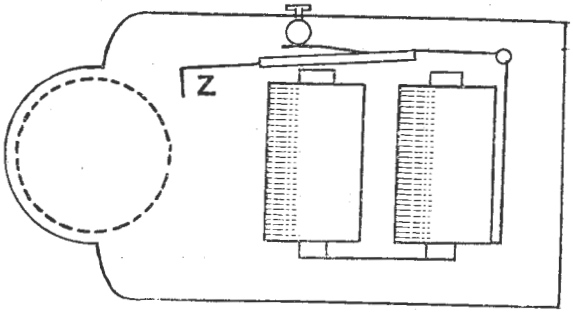
A comparatively easy way to learn to read the Morse flashlight is to connect a 2-volt bulb and socket in series with a key and cell in the same way as a buzzer.

One man operates the key and another reads the signals. If the light be too bright it may be dimmed by holding a torch lens in front of it.

A.C.J.

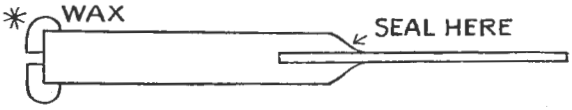
A SMALL MERCURY BREAK.

A small mercury break, which would be very useful to the experimenter, can be made by procuring an old bell and re-



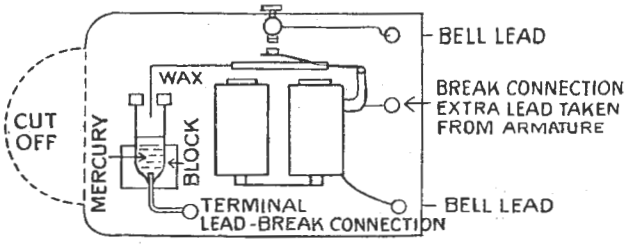
moving the gong. The hammer will have to be taken off, but not the wire to which it is fastened.

Next procure a piece of brass tube, not



too wide, and heat one end. Insert a piece of copper wire, and seal it by pressing the hot brass ends together with the pincers.

Place a piece of sealing wax on * with



an eighth-inch hole in the centre. Then get a small block of wood about one inch square, and bore a hole half-way down one

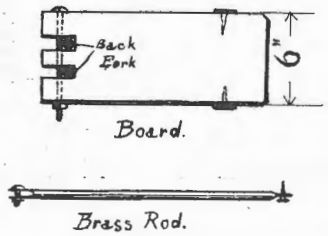
face (the diameter of the brass tube), then a small hole right through for the X wire.

Solder a piece of silver or gilt wire to the hammer wire marked Z in figure 1, then assemble.

With a little patience and adjusting this break will work very well for small coils (if the bell is tuned properly) and small experimental devices.

HOW TO MAKE A PARCEL-CARRIER FOR A BICYCLE.

A handy parcel-carrier for a bicycle may be made from a short piece of 6-inch board and a couple of brass rods about ½-inch diameter. The board has two slots cut in one end to fit the back fork of the bicycle, and a bolt is put through it in front of the fork to secure it. Each brass rod has one end flattened and drilled for a screw, while in the other end two parallel saw-cuts are



made running lengthways. The pieces of metal between the saw-cuts are then broken off, leaving two pieces projecting down. These are flattened, and a ¼-inch hole drilled near the end.

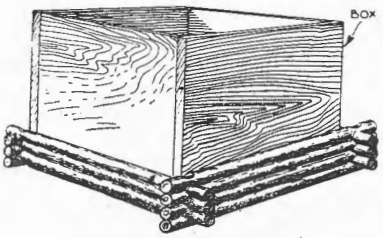
The rods are next screwed on each side of the board, about 3 inches from the end, and bolted with 1-inch by ¼-inch bolts on the lower ends of the fork.

The lengths of the board and rods may be determined to suit the wishes of the maker.

R.O.F.

AN IMITATION LOG HOUSE FOR THE BIRDS.

Nothing is more attractive than a log-cabin bird house. It is not only unique, but if made right it is strong and will last for years. A very easy way to make this bird house is to obtain a box with strong wooden sides for a shell over which the sticks representing logs are placed. The logs consist of hazel sticks ½ to ¾ inch in diameter. Start by tacking the sticks on as shown in the illustration, notch them, and fit them snugly in place. With a little care a beautiful piece of work can



A Box Makes a Form Over Which the Twigs Are Placed to Represent a Log House

be accomplished, something that most people will admire. Care should be taken to have each stick straight and free from knots.

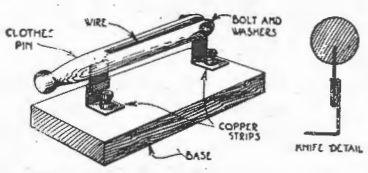
Leave a place for a door large enough for the entrance of the bird you are seeking to interest. Do not make the opening too large, or the sparrows will pass in. To foil the sparrows provide no step or twig outside the door. Sparrows cannot enter unless they have something to sit on outside the door.

The roof of the cabin may be made of 1-inch boards, and it may be shingled, using the thin upper half of ordinary shingles. This end makes the right thickness for these shingles.

Illustrated World.

A WOODEN CLOTHESPIN MAKES LEVER FOR ELECTRIC SWITCH.

While endeavouring to give a lake cottage some of the minor conveniences of a city dwelling by using power, we recently made a somewhat novel battery switch. All we had for tools were a small hand drill,



Wooden Clothespin Makes Electric Lever

a jackknife and a small cold chisel. Some battery screws were knocked from some cells left there the year previous. The copper bottom of a small tea kettle, which

had been allowed to freeze and burst, furnished some copper strips. An old wooden clothespin completed our stock of material.

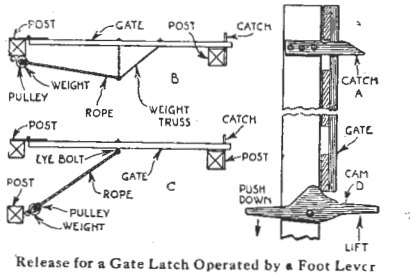
A piece of the copper was forced with a bit of wire into the crotch of the pin, which answered for the blade, allowing a circuit through to the post. The friction of the wood kept the knife stiff in place. The switch was used for a small gasoline engine. More tools and more material would have permitted a better substitute for the real article.

F. W. Bentley, Jr.

A WEIGHT AND RELEASE OPENS FARM GATE.

The sketch shows how a farm gate may be made to open and close easily and without using the hands. Such a latch opening is especially valuable in the feeding yards, the milking enclosure and other places where a man has both hands full while doing chores.

Any type of gate may be hung so that it will swing over a catch such as shown in the detail *A*. A way to insure the closing of the gate is to use one of the weight rigs shown in details *B* or *C*. A simple pedal release operating on a cam principle, which raises the gate off the catch so that it can be swung out of the way by a push of the foot, is illustrated in detail *D*. The gate is closed by the weight.



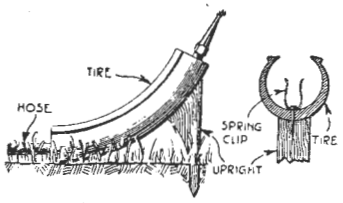
Release for a Gate Latch Operated by a Foot Lever

Hinges for such gates must be sturdy, and fitted so that they will hold the gate up, for dragging will make the release and the weight useless.

Illustrated World.

A HOSE NOZZLE SUPPORT FOR SPRINKLING LAWN.

When one wishes to sprinkle the lawn with a common garden hose it is usually necessary to hold the nozzle in the hands while doing so. A support for doing this is illustrated herein. It will relieve one of this duty, and it can be made from the simplest materials.



An Old Automobile Tire Makes Support for Holding Hose in Position for Sprinkling Lawn

Procure a section of an old automobile tyre, about 2 feet long, and nail one end to a supporting stick somewhat like the shape shown in the illustration. This should be long enough so that it can be thrust deep into the ground.

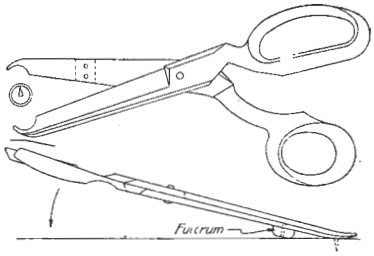
Make a spring clip of stiff brass or steel that will set up in the centre of the tire and hug the hose tightly. This is held in position by one of the nails holding the tyre to the stick.

Set the nozzle of the hose in the clip, push the stick into the ground so that it will adjust the stream at the right angle, and you can leave it there.

Illustrated World.

OLD SCISSORS MADE INTO THUMB-TACK PULLER.

In large drafting rooms where there are several men employed and drawings are constantly being removed from boards, a handy tool for pulling thumb tacks can be made from an old pair of scissors.



An Old Pair of Scissors Used in Making a Thumb-Tack Puller

Heat the ends of the blades in a flame until they reach a cherry red, and then let them cool off slowly to soften and draw the temper. File or grind a round notch in each blade close to the end as shown, and sharpen the blade at this point to a knife-like sharpness. When this is

done heat the blades once more and bend both at a slight angle. Drill two small holes in the bottom blade, just above the bend, and rivet on a small piece of metal to act as a fulcrum; then reheat and harden as before.

The tool is used as indicated by closing the notches about the stem of the tack and then pressing down on the handles. The great leverage gained by the fulcrum aids in pulling the most stubborn tack without injuring the board or drawing, and also saves the finger nails from injury.

A SOLUTION FOR REMOVING OLD WALL PAPER.

Great difficulty is often encountered in removing old paper from walls, where as many as five thicknesses have been applied, one over the other. Such covering will cling to the wall with great tenacity and defy removal. About the only fluid to use in washing old wall paper to loosen it up is hot water, which only soaks through one paper at a time. A strong mixture of sal-soda and water will remove several thicknesses of wall paper. The mixture should be boiled, and should be applied hot. After three or four applications the soda will eat through the glue size to the plastering—something that hot water will not do. A small scraper should be used to separate and get under the layers after the last brushing with the hot mixture. If sal-soda is used it will make a one-hour job.

A STAIN FOR WOODWORK, AND HOW TO MAKE IT.

A very cheap, yet satisfactory and efficient way of making a stain to be used on floors and other woodwork may be made by dissolving 2 ounces of permanganatae of potash in 1 gallon of water. The water is brought to the boiling point, then the potash is slowly poured in and stirred until all is mixed with the water. The mixture is now applied by means of a broad brush. At first the colour will be red, but as it soaks in and dries it turns brown.

CLEANING AND OILING THE SEWING MACHINE.

When the sewing machine becomes clogged and gummy it may easily be cleaned and made to run like a new one. Empty the small oiler, or, better still, take an extra one, and fill it with kerosene. Then remove the spool of thread and bobbin, and thoroughly oil all the parts, not forgetting the treadle. Lift the head to see that the places beneath it get a share. Put on the oil generously.

Having done this, replace the band, sit down at the machine and run it vigorously for about a minute so that the kerosene may reach and clean every part. Wipe every bit of machinery with a soft cloth to remove the kerosene. This should be done thoroughly. Next, carefully oil every part with some good machine oil. When done rub all exposed parts with a clean cloth, place a bit of goods under the presser foot and stitch back and forth a few times in order to clean well before threading the needle and starting sewing.

REMOVING OLD PAINTS BEFORE APPLYING NEW COATS.

For the man who paints his own buildings one of the most troublesome jobs is scraping off the old loose paint, and it is all because he does not have a satisfactory scraper.

A discarded blade from a mowing machine, or even one of the curved blades from a lawn mower, will make a first-class paint scraper. A hole drilled through the mower blades provides a means of attaching a good handle. The lawn mower blade is long and more slender. It is heated, and both ends bent back, first in a hairpin turn, and then parallel to and against each other, the two being wrapped with tape and forming the handle. This makes a light tool with a 6 or 8 inch blade.

USE COPPER WIRE WHEN YOU HANG PICTURES.

Experts have made many tests recently to determine which kind of wire will give the safest and most lasting support for the suspension of paintings in art galleries or homes.

It was found that copper wire, plain, and in a single strand, is far superior to twisted or braided cords of thin iron or brass wires, and has the additional advantage of being rust-proof.